Memorandum of Understanding

for Collaboration in the Construction of the Compressed Baryonic Matter (CBM) Experiment at FAIR

between

the Facility for Antiproton and Ion Research in Europe GmbH, hereinafter referred to as FAIR, as the Host Laboratory

and

the institutions forming the CBM Collaboration
(hereinafter referred to as “Institutes”) together with the corresponding funding agencies

Preamble

The institutions forming the CBM Collaboration and FAIR have agreed to collaborate in order to perform a unique experiment and by thus studying the properties of nuclear matter at the highest baryon densities. The CBM Experiment shall be jointly constructed by the Institutes and established at FAIR.

FAIR will serve as the Host Institute and build the experimental area for the Experiment (CBM cave).
FAIR will evaluate and accredit the Technical Design Reports (via the Expert Committee Experiments, ECE), which will be the basis for the construction of the CBM experiment. FAIR will monitor the construction costs via the Resources Review Boards.
The CBM Technical Coordinator and the CBM Resource Coordinator are besides the spokesperson the link persons between the CBM Collaboration and FAIR.

The CBM collaboration has signed in 2012 a *Pre-Construction* Memorandum of Understanding in order to affirm the intention of the Institutes to build the CBM Experiment. In particular the Institutes declared to take over responsibilities for the construction of the different CBM Sub-Systems. In the *Pre-Construction* MoU the Institutes expressed their intention to provide corresponding construction funds or to submit funding applications to their ministries or funding agencies.

This MoU comprises the start version of CBM to be realized at SIS100. The CBM “day 1” setup is defined as well **(Annex 10)**, which is funded to larger extent. The Institutes confirm in this MoU to contribute In-Kind or with manpower to the construction/realization of the CBM experiment.

The CBM collaboration and the HADES Collaboration signed a Memorandum of Understanding to regulate the installation of the both experiments in the Cave, the sharing of detector equipment and to work out a proposal for the initial phase of the compressed baryonic matter research program to be performed by CBM and HADES with the beams from the SIS100.

The general obligations of FAIR in its role as Host Laboratory and of the Institutes are contained in the document 'General Conditions Applicable for Experiments Performed at FAIR'. This document applies fully to the execution of this MoU and is attached as **Annex 9**.

Article 1 Parties to this MoU

1.1 Parties shall be all institutions forming the CBM Collaboration, which are contributing In-Kind or with manpower to the construction/realization of the CBM experiment. In addition FAIR will be Party to this MoU.

1.1 The institutions of the CBM Collaboration (hereinafter referred to as "Institutes") are listed in **Annex 1**.

1.2 **Annex 2** lists the Funding Agencies. The Funding Agency may be an Institute or an established institution acting on behalf of one or more funding agencies.

Article 2 Purpose of this MoU

2.1 This MoU defines the construction phase of the CBM experiment. Its purpose is to define the program of work to be carried out for this phase and the distribution of charges and responsibilities among the Parties for the execution of this work. It further sets out organizational, managerial and financial guidelines to be followed by the Parties.

2.2 The construction phase comprises the engineering design, final prototyping, construction, calibration, transportation, assembly, installation and commissioning of the elements which will be part of the CBM experiment.

2.3 In addition, this MoU constitutes the intention of the institutes to take on responsibilities for the construction of the different sub-systems of the experiments. The corresponding contributions shall be in-kind. The Institutes expressed their intention to provide corresponding construction funds and manpower or to submit funding corresponding applications to their ministries or funding agencies.

2.4 The signing funding agencies express the intention to provide corresponding construction funds to the institutes of the CBM collaboration as listed in Annex 4 and as discussed in the CBM Resource Review Board (RRB).

Article 3 Duration of this MoU and its Extension

3.1 The MoU will be amended by an Addendum regarding "Maintenance and Operation" as soon as the CBM experiment enters into the operating phase.

3.2 This MoU may be extended at any time by agreement of the Parties.

3.3 Any funding agency may withdraw its support from the Collaboration by giving not less than twelve month notice in writing to the Collaboration and to the FAIR Scientific Director. In such an event, reasonable compensation to the Collaboration shall be negotiated through FAIR and confirmed by the

CBM RRB.

3.4 Any Institute may withdraw from the Collaboration according to Collaboration rules (Annex 3b) and according to the procedures as set out in the General Conditions (**Annex 9**) and by giving notice in writing to its funding agency.

3.5 Any Institute that joins the CBM Collaboration in accordance with the Collaboration rules during the lifetime of this MoU shall accept the agreements in force.

Article 4 The CBM Experiment and Collaboration

4.1 The CBM Experiment has been described in detail in the Technical Status Report submitted to the FAIR Scientific and Technical Issues Committee (STI) in January 2005 and in the update submitted in January 2006 summarised in the FAIR Baseline Report.

4.2 A list of the participating institutes in the CBM Collaboration with the name of the Collaboration Board member, as well as the compilation of the members of the CBM Collaboration are given by Country and by Institute in **Annex 1 and 3a**. The management structure of the Collaboration is described as well in the attached CBM organisation document. Persons currently holding management positions in the Collaboration are given in **Annex 3b**.

4.3 The updated information on the concept and technical realization of each sub-system of the CBM experiment is given in the Technical Design Reports (TDRs). The TDRs are evaluated by the FAIR Expert Committee Experiments (ECE). FAIR shall accredit the TDRs subject to a recommendation by the ECE. After approval the parties shall finalize negotiations concerning the funding of the respective sub-systems in order to secure the funding. The Status of the CBM TDRs is listed in **Annex 5**.

4.4 Any Institute that wishes to join the Collaboration during the period of validity of this MoU will be expected to make an appropriate contribution to the funding of the detector construction including the Common Projects. A manpower contribution is also possible.

This will be negotiated by the Collaboration and endorsed by the RRB. In the event that the detector construction is already fully funded, the new Institute will have to make a special contribution which will be negotiated by the Collaboration and endorsed by the RRB.

Article 5 Program of Work for the Construction Phase of the CBM Experiment and Sharing of responsibilities for its Execution

5.1 The total construction work for the CBM experiment is divided into:

5.1.1 Sub-system construction, which will be the responsibility of individual Institutes, or groups of Institutes, and

5.1.2 Common Projects comprising those elements of the experiment construction

which the Collaboration has agreed are to be provided at the common expense of the Collaboration; see art. 6.

5.2 The technical participation of the Institutes in subsystem construction is set out in **Annex 4a**. In this Annex the deliverables to be provided by the Institutes and Funding Agencies for all CBM subsystems (including estimated cost values) are given in detail. Also the present status of funding (secured / expression of interest / to be assigned) is indicated.

5.3 **Annex 4b** includes summary tables of the values of commitments by Country and Funding Agency to the CBM Subsystems. Also the detailed Cost and Funding Matrix for the CBM subsystems with all PSP codes as presented to the RRB is included in this Annex.

5.4 Following the recommendations of the FAIR Cost Review Committee for Experiments (CORE-E) the manpower and financial resources needed for the CBM experiment are grouped into three headings:

5.4.1 R&D work on the various detector elements;

5.4.2 costs for infrastructure in the Institutes, and costs for personnel, travel, etc. of the Institutes as arising from their participation in the Collaboration;

5.4.3 engineering design, final prototyping, construction, calibration, transportation, assembly, installation and commissioning costs for the complete detector.

The resources needed for work under the headings 5.4.1 and 5.4.2 are the responsibility of the Institutes supported by their respective Funding Agencies. These resources are neither accounted for in detector construction costs, nor monitored centrally by the Collaboration.

5.5 The Institutes, supported by their Funding Agencies, will make their best efforts to design, produce final prototypes, construct, calibrate, transport, assemble, install and commission all the deliverables listed in Annex 4a within the limits of their funding. In the event of cost overruns, these will first be brought, by the Institute(s) concerned, to the attention of the Collaboration and then to the RRB if solutions have not been found. The Collaboration will propose ways of accommodating such overruns including descoping or staging if other ways cannot be found, and seek the endorsement of the RRB.

5.6 **Annex 7** gives an overview of the foreseen construction schedule.

5.7 A breakdown indicating substantial manpower contributions of the institutes to the subsystem construction, to computing subprojects, to the Physics Working Groups and to Preparation and Coordination tasks is given in **Annex 6.**

Article 6 Common Projects and Common Fund

The implementation of the Cave Infrastructure has been defined so far as the only Common Project of the CBM Collaboration for the realization of the CBM experiment.

The financing of the Cave Infrastructure will be organized by cash payments to a

dedicated Common Fund. In-Kind contributions are also possible. The Common Fund will be managed and operated by the CBM Resource Coordinator, taking advice from the CBM Management. All Common Fund operations will be monitored by the RRB.

The detailed procedure for collecting the cash contribution and the planned spending profile is given in **Annex 8.**

Institutes, which join the CBM collaboration as full member during the construction period, have to pay the same amount to the Common Fund according to the number of PhD holders working for CBM, as if they were full member during the whole construction period.

Responsibility for the maintenance and operation of the common equipment for the CBM experiment rests jointly with the Collaboration as a whole and with FAIR as Host Laboratory, in accordance with the General Conditions. It is a fundamental principle that each Institute within the Collaboration shall participate in both maintenance and operation and contribute a fair and equitable share of common costs.

Article 7 Obligations of FAIR as Host Laboratory, and of the Institutes

7.1 The obligations of FAIR as Host Institution and of the Institutes are contained in the document “General Conditions for Experiments Performed at FAIR” This document is regarded as an integral part of this MoU and is attached as **Annex 9**.

7.2 All equipment brought to the FAIR site must comply with FAIR’s safety regulations. If relevant, the design, test criteria and testing of equipment should be discussed well in advance with FAIR’s safety officials. All equipment brought to FAIR must be accessible for inspection with regard to matters of safety.

7.3 It is a fundamental principle that an Institute having contributed a component of equipment, shall also contribute to the necessary scientific and technical manpower support to operate that component, maintain it in good working order and dismantle it when individual experiments are completed.

Article 8 Relationship CBM Collaboration – FAIR

The CBM Collaboration is represented by its management in the communication with FAIR. The CBM Technical Coordinator (TC) and the CBM Resource Coordinator (RC) are besides the CBM Spokesperson the link persons between the CBM Collaboration and the FAIR management.

The Spokesperson, the TC and the RC are elected by the CBM Collaboration according to the organizational procedures defined in **Annex 3b**. The TC and the RC are either seconded to or directly employed by FAIR GmbH. The TC and the RC report to the CBM Collaboration Board and to the CBM Management Board.

Article 9 Rights and Benefits of the Institutes

The Institutes participating in the Collaboration are entitled to join the operational phase of the project and to participate in the scientific exploitation of the data acquired. Further details are set out in the current document “General Conditions Applicable to Experiments Performed at FAIR” **(Annex 9)**.

Article 10 Administrative and Financial Provisions

General financial matters and purchasing rules and procedures for the FAIR experiments, including the rules which apply for Common Fund operations, are dealt with in accordance established procedures at FAIR GmbH.

The budget for the Common Funds listed in **Annex 8** shall be endorsed annually in advance by the CBM Collaboration Board. The cost shall be shared according to the rules defined in **Annex 8**.

Article 11 Amendments

This MoU may be amended at any time with the agreement of its signatories or of their appointed successors. In particular an amendment to this MoU has to be concluded for the operation phase of the CBM experiment for Maintenance and Operation. Any such amendments will be subject to the prior agreement of the RRB.

Article 12 Disputes

The primary mechanism for resolving disputes between Institutes shall be negotiation within the CBM Collaboration Board according to the Collaboration rules.
Any dispute between Funding Agencies shall be resolved by negotiation or, failing that, by arbitration through the Chair of the FAIR Council, who may, at his or her discretion, adopt any form of arbitration process.
Any dispute between a Funding Agency and FAIR will be addressed on the FAIR council level.

Article 13 Effective date

This MoU shall become effective when one third of the Institutes or funding agencies listed in the cost-matrix of the CBM experiments have signed the MoU.

Article 14 Annexes

All the Annexes are an integral part of this MoU. They are understood to be the planning basis for the construction of the CBM experiment.

Article 15 Final Provisions

This MoU is not legally binding, but the collaborating institutes and funding agencies recognize that the success of the CBM Collaboration depends on all its members adhering to its provisions.

ANNEXES

All the annexes are an integral part of this MoU. They are understood to be the planning basis for the construction and commissioning of the CBM experiment. Updates will be possible and must be agreed upon by the respective parties by means of amendments to the appropriate annex or annexes.

Annex 1: List of Institutions (and names of the Collaboration Board members) forming the CBM Collaboration

Annex 2; List of Funding Agencies and their Representatives

Annex 3a: List of the members of the CBM Collaboration given by Country and by Institute

Annex 3b: Organisation rules of the CBM Collaboration, Management structure of the CBM Collaboration, Management Board members and of persons holding management positions in the CBM Collaboration

Annex 4a: Detailed compilation of the Construction Cost and Funding of the Detector/Subsystems, and of Responsibilities for the Construction Workpackages by the Institutes.

Annex 4b: Summary Tables on Construction Cost and Funding with the Values of Commitments by Funding Agency to the CBM Detectors/Subsystems.

Annex 5: Status of Technical Design Reports

Annex 6: List of substantial manpower contributions of Institutes to Subsystem Construction, to Computing Subprojects, to the Physics Working Groups and to Preparation and Coordination tasks

Annex 7: Construction Schedule

Annex 8: Procedures for the Common Construction Fund for the Cave Infrastructure

Annex 9: General conditions applicable to experiments at FAIR

Annex 10: The CBM Day 1 experimental setup

The Facility for Antiproton and Ion Research in Europe GmbH (Darmstadt, Germany)

and

_____

declare that they agree on the present Memorandum of Understanding for the CBM Experiment.

Done in Darmstadt Done in _____

_____ _____

For FAIR For _____

_____ _____

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Annex 1: List of Institutions (and names of the Collaboration Board members) forming the CBM Collaboration

Mnemo	City	Country	Status	Join Date	Full Name	Represented in CB by
AMU	Aligarh	India	FULL	26.09.2007	Department of Physics, Aligarh Muslim University	Muhammad Irfan
THU	Beijing	China	FULL	15.10.2008	Department of Engineering Physics, Tsinghua University	Yi Wang
ZIB	Berlin	Germany	FULL	23.04.2015	Konrad-Zuse-Zentrum für Informationstechnik Berlin (ZIB)	Alexander Reinefeld
IOPB	Bhubaneswar	India	FULL	21.09.2006	Institute of Physics	Pradip Kumar Sahu
NISER	Bhubaneswar	India	ASSO	22.03.2018	National Institute of Science Education and Research (NISER)	Bedangadas Mohanty
IFIN-HH	Bucharest	Romania	FULL	13.02.2004	Horia Hulubei National Institute of Physics and Nuclear Engineering (IFIN-HH)	Mihai Petrovici
UBucharest	Bucharest	Romania	FULL	27.02.2008	Atomic and Nuclear Physics Department, University of Bucharest	Alexandru Jipa
ELTE	Budapest	Hungary	FULL	13.02.2004	Eötvös Loránd University (ELTE)	Máté Csanád
WignerRCP	Budapest	Hungary	FULL	13.02.2004	Institute for Particle and Nuclear Physics, Wigner Research Centre for Physics, Hungarian Academy of Sciences	György Wolf
ECTP	Cairo	Egypt	ASSO	14.04.2016	Egyptian Center for Theoretical Physics, Faculty of Engineering, Modern University for Technology and Information (ECTP)	Abdel Nasser Tawfik
UPanjab	Chandigarh	India	FULL	21.09.2006	Department of Physics, Panjab University	Madan Mohan Aggarwal
UChongqing	Chongqing	China	FULL	27.09.2017	Chongqing University	Wenxiong Zhou
FAIR	Darmstadt	Germany	FULL	29.03.2012	Facility for Antiproton and Ion Research in Europe GmbH (FAIR)	Jürgen Eschke
GSI	Darmstadt	Germany	FULL	13.02.2004	GSI Helmholtzzentrum für Schwerionenforschung GmbH (GSI)	Christian Sturm
IKP-TUD	Darmstadt	Germany	FULL	27.09.2012	Institut für Kernphysik, Technische Universität Darmstadt	Tetyana Galatyuk
HZDR	Dresden	Germany	FULL	13.02.2004	Institut für Strahlenphysik, Helmholtz-Zentrum Dresden-Rossendorf (HZDR)	Burkard Kämpfer
JINR-LIT	Dubna	Russia	FULL	13.02.2004	Laboratory of Information Technologies, Joint Institute for Nuclear Research (JINR-LIT)	Victor Ivanov
JINR-VBLHEP	Dubna	Russia	FULL	13.02.2004	Veksler and Baldin Laboratory of High Energy Physics, Joint Institute for Nuclear Research (JINR-VBLHEP)	Vladimir Ladygin
FIAS	Frankfurt	Germany	FULL	07.10.2009	Frankfurt Institute for Advanced Studies, Goethe-Universität Frankfurt (FIAS)	Volker Lindenstruth
IKF-UFra	Frankfurt	Germany	FULL	13.02.2004	Institut für Kernphysik, Goethe-Universität Frankfurt	Joachim Stroth
IRI-UFra	Frankfurt	Germany	FULL	07.10.2009	Institute for Computer Science, Goethe-Universität Frankfurt	Udo Kebschull
SMIT	Gangtok	India	PART	05.10.2012	Sikkim Manipal Institute of Technology (SMIT)	Gobinda Chandra Mishra
PNPI	Gatchina	Russia	FULL	13.02.2004	Petersburg Nuclear Physics Institute named by B.P.Konstantinov of National Research Centre Kurchatov Institute" (PNPI)"	Vladimir Samsonov
UGiessen	Gießen	Germany	FULL	29.11.2010	Justus-Liebig-Universität Gießen	Claudia Höhne
UGauhati	Guwahati	India	FULL	15.10.2008	Nuclear and Radiation Physics Research Laboratory, Department of Physics, Gauhati University	Buddhadeb Bhattacharjee
USTC	Hefei	China	FULL	17.12.2005	Department of Modern Physics, University of Science & Technology of China (USTC)	Yongjie Sun
PI-UHd	Heidelberg	Germany	FULL	13.02.2004	Physikalisches Institut, Universität Heidelberg	Norbert Herrmann
ZITI-UHd	Heidelberg	Germany	FULL	13.02.2004	Institut für Technische Informatik, Universität Heidelberg	Peter Fischer
IIT-I	Indore	India	FULL	10.04.2014	Indian Institute of Technology Indore	Raghunath Sahoo
UJammu	Jammu	India	FULL	26.09.2007	Department of Physics, University of Jammu	Anju Bhasin
KIT	Karlsruhe	Germany	FULL	11.09.2014	Karlsruhe Institute of Technology (KIT)	Jürgen Becker
USilesia	Katowice	Poland	ASSO	13.02.2004	Institute of Physics, University of Silesia	Seweryn Kowalski
IIT-KGP	Kharagpur	India	FULL	21.09.2006	Indian Institute of Technology Kharagpur	Tarun Kanti Bhattacharyya
Bose	Kolkata	India	FULL	29.03.2012	Department of Physics, Bose Institute	Sibaji Raha
UCalcutta	Kolkata	India	FULL	26.09.2007	Department of Physics and Department of Electronic Science, University of Calcutta	Abhijit Bhattacharyya
VECC	Kolkata	India	FULL	03.03.2006	Variable Energy Cyclotron Centre (VECC)	Subhasis Chattopadhyay
AGH	Kraków	Poland	FULL	26.09.2007	AGH University of Science and Technology (AGH)	Robert Szczygieł
UJagiellonian	Kraków	Poland	FULL	13.02.2004	Marian Smoluchowski Institute of Physics, Jagiellonian University	Paweł Staszel
KINR	Kyiv	Ukraine	FULL	15.10.2008	High Energy Physics Department, Kiev Institute for Nuclear Research (KINR)	Valery Pugatch
UKyiv	Kyiv	Ukraine	FULL	13.02.2004	Department of Nuclear Physics, Taras Shevchenko National University of Kyiv	Igor Kadenko
INR	Moscow	Russia	FULL	13.02.2004	Institute for Nuclear Research (INR)	Fedor Guber
ITEP	Moscow	Russia	FULL	13.02.2004	Institute for Theoretical and Experimental Physics (ITEP)	Ivan Korolko
MEPhI	Moscow	Russia	FULL	11.03.2005	National Research Nuclear University MEPhI	Ilya Selyuzhenkov
NRC-KI	Moscow	Russia	FULL	13.02.2004	National Research Centre Kurchatov Institute""	Vladislav Manko
SINP-MSU	Moscow	Russia	FULL	13.02.2004	Skobeltsyn Institute of Nuclear Phyiscs, Lomonosov Moscow State University (SINP-MSU)	Mikhail Merkin
UMuenster	Münster	Germany	FULL	13.02.2004	Institut für Kernphysik, Westfälische Wilhelms-Universität Münster	Anton Andronic
IIT-B	Mumbai	India	ASSO	14.04.2016	Indian Institute of Technology Bombay	Sadhana Dash
CTU	Prague	Czech Republic	FULL	13.02.2004	Czech Technical University (CTU)	Vojtěch Petráček
IHEP	Protvino	Russia	FULL	13.02.2004	Institute for High Energy Physics (IHEP)	Alexander Vorobiev
PNU	Pusan	Korea	FULL	13.02.2004	Pusan National University (PNU)	In-Kwon Yoo
NPI-CAS	Řež	Czech Republic	FULL	13.02.2004	Nuclear Physics Institute of the Czech Academy of Sciences	Andrej Kugler
NBU	Siliguri	India	ASSO	14.04.2016	Department of Physics, Faculty of Science, University of North Bengal	Amitabha Mukhopadhyay
USplit	Split	Croatia	ASSO	01.03.2007	University of Split	Mile Dželalija
UKashmir	Srinagar	India	FULL	26.09.2007	Department of Physics, University of Kashmir	M. Farooq Mir
Ioffe	St. Petersburg	Russia	ASSO	07.04.2011	Ioffe Institute, Russian Academy of Sciences	Vladimir Eremin
KRI	St. Petersburg	Russia	ASSO	13.02.2004	V.G. Khlopin Radium Institute (KRI)	Vladimir Jakovlev
SPbPU	St. Petersburg	Russia	ASSO	13.02.2004	St. Petersburg Polytechnic University (SPbPU)	Yaroslav Berdnikov
IPHC	Strasbourg	France	FULL	13.02.2004	Institut Pluridisciplinaire Hubert Curien (IPHC), IN2P3-CNRS and Université de Strasbourg	Marc Winter
UTuebingen	Tübingen	Germany	FULL	07.04.2011	Physikalisches Institut, Eberhard Karls Universität Tübingen	Hans Rudolf Schmidt
UBanaras	Varanasi	India	FULL	21.09.2006	Department of Physics, Banaras Hindu University	Bhartendu Kumar Singh
TUWarsaw	Warsaw	Poland	FULL	11.04.2013	Institute of Electronic Systems, Warsaw University of Technology	Ryszard Romaniuk
UWarsaw	Warsaw	Poland	FULL	13.02.2004	Faculty of Physics, University of Warsaw	Krzysztof Piasecki
CCNU	Wuhan	China	FULL	11.03.2005	College of Physical Science and Technology, Central China Normal University (CCNU)	Daicui Zhou
UWuppertal	Wuppertal	Germany	FULL	07.10.2009	Fakultät für Mathematik und Naturwissenschaften, Bergische Universität Wuppertal	Karl-Heinz Kampert
CTGU	Yichang	China	FULL	23.04.2015	College of Science, China Three Gorges University (CTGU)	Sheng-Qin Feng

Annex 2; List of Funding Agencies and their Representatives

List of Funding Agencies

Country	Funding agency
China	Central China Normal University
Czech Republic	MSMT
France	CNRS
Germany	BMBF
Germany	HMWK
Germany	GSI
Hungary	Hungarian Academy of Sciences
India	DST
Korea	Pusan National University
Poland	Council of the Polish Shareholder of FAIR GmbH - JAGIELLONIAN UNIVERSITY IN KRAKÓW
Romania	MEN
Russia	ROSATOM
Ukraine	NASU / State Agency of Ukraine

Annex 3a: List of the members of the CBM Collaboration given by Country and by Institute

Family Name	Given Name	Salutation	Degree	Study	Status	Join Date	1st Affiliation	Aff State	Other Affiliation	Roles
Ablyazimov	Timur	Mr		phd	FULL	2013-08-09	JINR-LIT	FULL		
Adak	Rama Prasad	Mr	Dr		FULL	2013-04-03	Bose	FULL		
Adler	Alexander	Mr	MSci	phd	FULL	2018-04-18	IRI-UFra	FULL		
Agarwal	Kshitij	Mr		phd	FULL	2016-07-08	UTuebingen	FULL		
Aggarwal	Madan Mohan	Mr	Prof		FULL	2006-05-12	UPanjab	FULL		|CB|
Ahammed	Zubayer	Mr	Dr		FULL	2006-01-21	VECC	FULL		
Ahmad	Firdous	Mr			FULL	2011-04-28	UKashmir	FULL		
Ahmad	Nazeer	Mr	Dr		FULL	2007-10-05	AMU	FULL		
Ahmad	Shabir	Mr	Dr		FULL	2010-04-06	UKashmir	FULL		
Akindinov	Alexander	Mr	Dr		FULL	2004-10-13	ITEP	FULL		
Akishin	Pavel	Mr	Dr.habil		FULL	2004-10-13	JINR-LIT	FULL		
Akishina	Elena	Ms	Dr		ASSO	2004-10-13	JINR-LIT	FULL		
Akishina	Valentina	Ms	Dr		FULL	2011-12-13	IKF-UFra	FULL	JINR-LIT, GSI	|JR|
Al-Turany	Mohammad	Mr	Dr		FULL	2003-08-25	GSI	FULL		
Alekseev	Igor	Mr	Dr		FULL	2015-12-14	ITEP	FULL		
Alexandrov	Evgeny	Mr		phd	FULL	2013-08-09	JINR-LIT	FULL		
Alexandrov	Igor	Mr	Dr		FULL	2013-08-09	JINR-LIT	FULL		
Amend	Werner	Mr			ASSO	2015-06-22	IKF-UFra	FULL		
Andreeva	Tatiana	Ms			ASSO	2018-06-13	JINR-VBLHEP	FULL		
Andronic	Anton	Mr	Prof		FULL	2004-02-27	UMuenster	FULL		|CB|
Anisimov	Yuri	Mr			ASSO	2007-02-08	JINR-VBLHEP	FULL		
Appelshäuser	Harald	Mr	Prof		FULL	2003-10-21	IKF-UFra	FULL		
Argintaru	Danut	Mr	Dr		FULL	2010-07-26	UBucharest	FULL		
Artz	Ole	Mr		ba	ASSO	2017-04-27	IKF-UFra	FULL		
Atkin	Eduard	Mr	A.Prof		FULL	2004-01-13	MEPhI	FULL		
Avdeev	Sergey	Mr	Dr		ASSO	2010-02-19	JINR-VBLHEP	FULL		
Averbeck	Ralf	Mr	Dr		ASSO	2013-04-16	GSI	FULL		
Azmi	Mohd. Danish	Mr	Dr		FULL	2007-10-05	AMU	FULL		
Baban	Valerica	Ms	Dr		FULL	2010-07-26	UBucharest	FULL		
Bähr	Steffen	Mr	Dipl		FULL	2014-09-11	KIT	FULL		
Balzer	Matthias	Mr	Dipl		FULL	2014-09-11	KIT	FULL		
Baranova	Natalia	Ms			FULL	2006-01-21	SINP-MSU	FULL		
Bashir	Suraya	Mr			FULL	2011-04-28	UKashmir	FULL		
Baszczyk	Mateusz	Mr	Dr		FULL	2012-10-15	AGH	FULL		
Baznat	Mircea	Mr	Dr		ASSO	2014-04-04	JINR-VBLHEP	FULL		
Bechtel	Etienne	Mr	MSci	phd	FULL	2016-04-04	IKF-UFra	FULL		
Becker	Jürgen	Mr	Prof		FULL	2014-09-11	KIT	FULL		|CB|
Becker	Karl-Heinz	Mr	Dipl		FULL	2008-11-28	UWuppertal	FULL		
Beckhoff	Johannes	Mr		ma	FULL	2016-12-14	UMuenster	FULL		
Behring	Gaby	Ms			STAF	2016-03-31	UTuebingen	FULL		
Belogurov	Sergey	Mr	Dr		FULL	2006-01-21	JINR-LIT	FULL	MEPhI	
Belousov	Artemiy	Mr		phd	FULL	2016-07-25	FIAS	FULL		
Belyakov	Dmitry	Mr			ASSO	2014-11-25	JINR-LIT	FULL		
Bendarouach	Jordan	Mr	MSci	phd	FULL	2013-12-11	UGiessen	FULL	GSI	
Bercuci	Alexandru	Mr	Dr		FULL	2014-07-01	IFIN-HH	FULL		
Berdnikov	Alexander	Mr	Dr		FULL	2006-01-08	SPbPU	ASSO		
Berdnikov	Yaroslav	Mr	Prof		FULL	2004-02-23	SPbPU	ASSO		|CB|
Berendes	Roland	Mr			FULL	2009-03-18	UMuenster	FULL		
Bergmann	Cyrano	Mr	Dr		FULL	2008-06-10	UMuenster	FULL		|PTC|
Bertini	Denis	Mr	Dr		FULL	2012-03-01	GSI	FULL		
Bertini	Olga	Ms	Dr		FULL	2013-09-01	GSI	FULL		
Bertolone	Gregory	Mr	MSci		FULL	2017-04-22	IPHC	FULL		
Beşliu	Calin	Mr	Prof		ASSO	2008-03-25	UBucharest	FULL		
Bezshyyko	Oleg	Mr	A.Prof		FULL	2004-08-31	UKyiv	FULL		
Bhaduri	Partha Pratim	Mr	Dr		FULL	2007-02-07	VECC	FULL		
Bhasin	Anju	Ms	Prof		FULL	2007-10-01	UJammu	FULL		|CB|
Bhati	Ashok Kumar	Mr	Dr		FULL	2006-10-04	UPanjab	FULL		
Bhattacharjee	Buddhadeb	Mr	Dr		FULL	2008-10-31	UGauhati	FULL		|CB|
Bhattacharyya	Abhijit	Mr	Prof		FULL	2007-10-01	UCalcutta	FULL		|CB|
Bhattacharyya	Tarun Kanti	Mr	Prof		FULL	2010-03-15	IIT-KGP	FULL		|CB|
Bialas	Norbert	Mr		ma	ASSO	2017-03-31	IKF-UFra	FULL		
Biswas	Saikat	Mr	A.Prof		FULL	2011-01-17	Bose	FULL		
Blank	Thomas	Mr	Dr		FULL	2014-09-11	KIT	FULL		
Blau	Dmitry	Mr	Dr		FULL	2010-03-24	NRC-KI	FULL	MEPhI	
Blume	Christoph	Mr	Prof		FULL	2012-02-23	IKF-UFra	FULL	GSI	|PL|
Brzychczyk	Janusz	Mr	Dr.habil		FULL	2006-01-21	UJagiellonian	FULL		
Bubak	Arkadiusz	Mr	Dr		FULL	2008-12-02	USilesia	ASSO		
Bus	Tobias	Mr	BSci	ma	FULL	2016-04-03	IKF-UFra	FULL		
Bychkov	Alexander	Mr			FULL	2012-02-06	JINR-VBLHEP	FULL		
Byszuk	Adrian	Mr	MSci	phd	FULL	2013-07-19	TUWarsaw	FULL		
Călin	Marius	Mr	Dr		FULL	2008-03-25	UBucharest	FULL		
Cao	Ping	Mr	Prof		ASSO	2013-09-06	USTC	FULL		
Caselle	Michele	Mr	Dr		STAF	2018-04-25	KIT	FULL		
Chakrabarti	Amlan	Mr	Dr		FULL	2007-10-01	UCalcutta	FULL		
Chattopadhyay	Subhasis	Mr	A.Prof		FULL	2005-09-02	VECC	FULL	Bose	|SP-dep|CB|PL|RB|PB|COB|
Chaus	Andrii	Mr	Dr		FULL	2014-11-25	KINR	FULL		
Chepurnov	Victor	Mr			STAF	2006-01-21	JINR-VBLHEP	FULL		
Cherif	Hamda	Mr		phd	FULL	2014-12-09	IKF-UFra	FULL	GSI	
Ciobanu	Mircea Iuliu	Mr	Dr		ASSO	2004-10-04	GSI	FULL	ISSBucharest	
Claus	Gilles	Mr	Eng		FULL	2006-01-21	IPHC	FULL		
Csanád	Máté	Mr	A.Prof		FULL	2008-01-30	ELTE	FULL		|CB|
Czajkowski	Oskar	Mr		ba	ASSO	2017-12-05	UGiessen	FULL		
Das	Supriya	Mr	A.Prof		FULL	2006-01-04	Bose	FULL		
Das	Susovan	Mr		phd	FULL	2015-10-28	UTuebingen	FULL		
Dash	Sadhana	Ms	Prof		FULL	2016-04-26	IIT-B	ASSO		|CB|
de Cuveland	Jan	Mr	Dr		FULL	2009-05-25	FIAS	FULL		|CB-dep|PL-dep|SPL|
Dementiev	Dmitri	Mr		phd	FULL	2013-07-18	JINR-VBLHEP	FULL		
Deng	Wendi	Mr		phd	FULL	2015-12-04	CCNU	FULL		
Deng	Zhi	Mr	Prof		FULL	2008-10-28	THU	FULL		
Deppe	Harald	Mr	Dr		FULL	2004-11-11	GSI	FULL		
Deppner	Ingo	Mr	Dr		FULL	2007-05-09	PI-UHd	FULL		|PL|
Derenovskaya	Olga	Ms	Dr		FULL	2008-03-08	JINR-LIT	FULL		
Deveaux	Michael	Mr	Dr		FULL	2003-01-17	IKF-UFra	FULL		
Diab	Abdel Magied Abde	Mr	BSci	ma	FULL	2016-04-28	ECTP	ASSO		
Dillenseger	Pascal	Mr	MSci	phd	FULL	2009-10-13	IKF-UFra	FULL		
Ding	Zhiguo	Mr	BSci	phd	FULL	2017-10-24	USTC	FULL		
Dobyrn	Vladislav	Mr			ASSO	2010-03-24	PNPI	FULL		

Doğan	Merve	Ms	MSci	phd	ASSO	2017-10-06	GSI	FULL		
Dong	Sheng	Mr		phd	FULL	2015-12-04	CCNU	FULL	PI-UHd	
Dorokhov	Andréï	Mr	Dr		FULL	2006-01-21	IPHC	FULL		
Dorosz	Piotr	Mr	Dr		FULL	2016-10-04	AGH	FULL		
Dozière	Guy	Mr	MSci		FULL	2017-04-22	IPHC	FULL		
Dubey	Anand Kumar	Mr	Dr		FULL	2008-04-23	VECC	FULL		|PTC|
Dubnichka	Stanislav	Mr	Prof		ASSO	2012-02-06	JINR-VBLHEP	FULL		
Dubnichkova	Zuzana	Ms	Prof		ASSO	2012-02-06	JINR-VBLHEP	FULL		
Dürr	Michael	Mr	Prof		FULL	2012-09-16	UGiessen	FULL		
Dželalija	Mile	Mr	Prof		FULL	2003-01-10	USplit	ASSO		|CB|
Eiman	Abou El Dahab	Mr	Prof		FULL	2016-04-28	ECTP	ASSO		
Elsha	Vladimir V.	Mr			FULL	2015-03-12	JINR-VBLHEP	FULL		
Emschermann	David	Mr	Dr		FULL	2009-10-13	GSI	FULL		|DC|TC-dep|
Engel	Heiko	Mr	Dipl	phd	FULL	2011-12-22	IRI-UFra	FULL		
Eremin	Vladimir	Mr	Dr		FULL	2011-05-12	Ioffe	ASSO		|CB|
Eşanu	Tiberiu	Mr	Dr		FULL	2008-03-25	UBucharest	FULL		
Eschke	Jürgen	Mr	Dr		FULL	2003-01-10	FAIR	FULL	GSI	|CB|RC|
Fan	Xingming	Mr		phd	FULL	2014-08-29	HZDR	FULL	TUDresden	
Fateev	Oleg	Mr	Dr		FULL	2006-01-21	JINR-VBLHEP	FULL		
Feng	Sheng-Qin	Mr	Prof		FULL	2015-04-23	CTGU	FULL		|CB|
Fidorra	Felix	Mr	BSci	ma	FULL	2015-06-09	UMuenster	FULL		
Figuli	Shalina Percy Delic	Ms	MTech		FULL	2015-12-14	KIT	FULL		
Filozova	Irina	Ms		phd	ASSO	2013-08-09	JINR-LIT	FULL		
Fischer	Peter	Mr	Prof		FULL	2004-01-09	ZITI-UHd	FULL		|CB|
Flemming	Holger	Mr	Dr		FULL	2002-11-15	GSI	FULL		
Förtsch	Jörg	Mr	MSci	phd	FULL	2014-01-27	UWuppertal	FULL		
Foka	Panagiota	Mr	Dr		FULL	2016-09-20	GSI	FULL		
Frankenfeld	Ulrich	Mr	Dr		FULL	2011-07-22	GSI	FULL		
Friese	Volker	Mr	Dr		FULL	2003-01-10	GSI	FULL		|SPL|CC|
Friske	Eduard	Mr		phd	FULL	2014-04-23	UTuebingen	FULL		
Fröhlich	Ingo	Mr	Dr		FULL	2006-01-13	IKF-UFra	FULL		
Frühauf	Jochen	Mr			FULL	2009-01-21	GSI	FULL		
Galatyuk	Tetyana	Ms	A.Prof		FULL	2004-07-22	IKP-TUD	FULL	GSI	|CB|PB|
Gangopadhyay	Gautam	Mr	Prof		FULL	2007-10-01	UCalcutta	FULL		
Gao	Xin	Ms	Dr		FULL	2018-04-13	GSI	FULL		
García Chávez	Cruz de Jesús	Mr	MSci	phd	FULL	2011-07-04	UMuenster	FULL	IRI-UFra	
Gebelein	Jano	Mr	Dr		FULL	2008-07-17	IRI-UFra	FULL		
Geßler	Thomas	Mr	Dr		FULL	2018-04-16	UGiessen	FULL		
Ghosh	Chandrasekhar	Mr	MSci	phd	FULL	2017-02-09	VECC	FULL		
Ghosh	Sanjay K.	Mr	Prof		FULL	2012-04-03	Bose	FULL		
Ghosh	Somnath	Mr	MSci	phd	FULL	2016-04-26	NBU	ASSO		
Ghosh	Tamal	Mr	MTech		ASSO	2017-02-09	VECC	FULL		
Gläßel	Susanne	Ms	BSci	ma	FULL	2014-01-27	IKF-UFra	FULL		
Goffe	Mathieu	Mr	MSci		FULL	2012-02-13	IPHC	FULL		
Golinka-Bezshyyko	Larisa	Ms	Dr		FULL	2014-04-03	UKyiv	FULL		
Golosov	Oleg	Mr		ma	FULL	2018-08-17	MEPhI	FULL		
Golovatyuk	Vjatcheslav	Mr	Dr		ASSO	2006-01-21	JINR-VBLHEP	FULL		
Golovnya	Sergey	Mr			FULL	2009-03-16	IHEP	FULL		
Golubeva	Marina	Ms			FULL	2006-01-21	INR	FULL		
Golubkov	Dmitry	Mr	Dr		FULL	2009-03-03	ITEP	FULL		
Gómez Ramírez	Andrés	Mr	BSci	phd	FULL	2013-10-01	IRI-UFra	FULL		
Gope	Somen	Mr		phd	FULL	2017-10-15	UGauhati	FULL		
Gorbunov	Sergey	Mr	Dr		FULL	2005-02-03	FIAS	FULL		
Gorokhov	Sergey	Mr			FULL	2013-10-02	IHEP	FULL		
Gottschalk	Dirk	Mr			FULL	2007-02-06	PI-UHd	FULL		
Gryboś	Paweł	Mr	Prof		FULL	2007-10-01	AGH	FULL		
Guber	Fedor	Mr	Dr		FULL	2003-08-25	INR	FULL		|PL|CB|
Gumiński	Marek	Mr	MSci	phd	FULL	2014-11-28	TUWarsaw	FULL		
Gupta	Anik	Mr	Dr		FULL	2007-10-01	UJammu	FULL		
Gusakov	Yuri	Mr			FULL	2006-01-21	JINR-VBLHEP	FULL		
Han	Dong	Ms	Prof		FULL	2014-12-18	THU	FULL		
Hartmann	Helvi	Ms		phd	FULL	2014-03-26	FIAS	FULL		
Hartung	Georg	Mr	Prof		FULL	2012-09-16	FHKoeln	#PAR		|CP|
He	Shu	Mr	BSci	phd	FULL	2016-10-21	CCNU	FULL		
He	Xionghong	Mr			FULL	2018-05-07	IMP	EXT		
Hehner	Jörg	Mr			FULL	2011-07-22	GSI	FULL		
Heine	Norbert	Mr			FULL	2009-03-18	UMuenster	FULL		
Herrmann	Norbert	Mr	Prof		FULL	2003-01-08	PI-UHd	FULL		|CB|SP|PB|
Heuser	Johann M.	Mr	Dr		FULL	2005-01-27	GSI	FULL		|PTC|
Hildenbrand	Klaus	Mr	Dr		STAF	2012-09-16	GSI	FULL		
Himmi	Abdelkader	Mr	MSci		FULL	2006-01-21	IPHC	FULL		
Höhne	Claudia	Ms	Prof		FULL	2004-04-13	UGiessen	FULL		|CB|PL|
Hoffmann	Jan	Mr			STAF	2014-02-15	GSI	FULL		
Holzmann	Romain	Mr	Dr		FULL	2003-01-10	GSI	FULL		
Hu	Dongdong	Mr		phd	FULL	2015-12-14	USTC	FULL	PI-UHd	
Hu-Guo	Christine	Ms	Dr		FULL	2017-04-22	IPHC	FULL		
Huang	Guangming	Mr	Prof		FULL	2012-02-14	CCNU	FULL		
Huang	Xinjie	Mr		phd	FULL	2013-08-14	THU	FULL		
Hutter	Dirk	Mr		phd	FULL	2011-03-08	FIAS	FULL		
Ierusalimov	Alexander	Mr			FULL	2003-01-10	JINR-VBLHEP	FULL		
Irfan	Muhammad	Mr	Prof		FULL	2007-10-01	AMU	FULL		|CB|
Ivanishchev	Dmitry	Mr	Dr		FULL	2014-11-24	PNPI	FULL		
Ivanov	Marian	Mr	Dr		ASSO	2013-04-16	GSI	FULL		
Ivanov	Pavel	Mr	Dr		FULL	2014-11-21	MEPhI	FULL		
Ivanov	Valery	Mr	Dr		ASSO	2006-01-21	JINR-LIT	FULL		
Ivanov	Victor	Mr	Prof		FULL	2004-01-20	JINR-LIT	FULL	MEPhI	|CB|
Ivanov	Vladimir	Mr	Dr		FULL	2006-01-21	PNPI	FULL	MEPhI	
Ivashkin	Alexander	Mr	Dr		FULL	2006-01-21	INR	FULL		|PTC|
Jahan	Hushnud	Ms	Dr		FULL	2013-05-15	AMU	FULL		
Jakovlev	Vladimir	Mr	Dr		FULL	2009-02-25	KRI	ASSO		|CB|
Janson	Thomas	Mr	Dipl	phd	FULL	2012-09-15	IRI-UFra	FULL		
Jash	Abhik	Mr	Dr		FULL	2018-05-15	NISER	ASSO		
Jipa	Alexandru	Mr	Prof		FULL	2008-03-25	UBucharest	FULL		|CB|
Kadenko	Igor	Mr	Prof		FULL	2004-02-23	UKyiv	FULL		|CB|
Kähler	Philipp	Mr	MSci	phd	FULL	2015-04-10	UMuenster	FULL		|PTC-dep|
Kämpfer	Burkard	Mr	Prof		FULL	2006-01-21	HZDR	FULL	TUDresden	|CB|
Kalinin	Valery	Mr			FULL	2012-02-10	KRI	ASSO		
Kampert	Karl-Heinz	Mr	Prof		FULL	2008-11-28	UWuppertal	FULL		|CB|PL|RB|

Kapell	Ralf	Mr	Eng		FULL	2018-02-09	GSI	FULL		
Kaptur	Emil	Mr	MSci	phd	FULL	2012-02-06	USilesia	ASSO		
Karabowicz	Radoslaw	Mr	Dr		FULL	2012-03-01	GSI	FULL		
Karg	Jakob Peter	Mr			STAF	2018-05-08	GSI	FULL		
Kargin	Nikolay	Mr	Prof		FULL	2017-01-30	MEPhI	FULL		|CB|
Karmanov	Dmitry	Mr	Dr		FULL	2006-01-21	SINP-MSU	FULL		
Kashirin	Evgeny	Mr		phd	FULL	2018-03-16	MEPhI	FULL		
Kashyap	Varchaswi K.S.	Mr	Dr		FULL	2018-03-22	NISER	ASSO		
Kasiński	Krzysztof	Mr	Dr		FULL	2009-02-09	AGH	FULL		
Kasprowicz	Grzegorz	Mr	Dr		FULL	2012-09-16	TUWarsaw	FULL		
Kaur	Manjit	Ms	Prof		FULL	2006-05-12	UPanjab	FULL		
Kazantsev	Andrey	Mr			FULL	2006-01-21	NRC-KI	FULL		
Kebschull	Udo	Mr	Prof		FULL	2004-10-04	IRI-UFra	FULL		|CB|
Kekelidze	Georgy	Mr	Dr		FULL	2006-01-21	JINR-VBLHEP	FULL		
Khan	M. Mohsin	Mr	Dr		FULL	2007-10-05	AMU	FULL		
Khanzadeev	Alexei	Mr	Prof		FULL	2005-03-18	PNPI	FULL	MEPhI	|PL|
Khasanov	Farid	Mr	Dr		FULL	2008-06-26	ITEP	FULL		
Khvorostukhin	Andrey	Mr	Dr		ASSO	2014-04-04	JINR-VBLHEP	FULL		
Kirakosyan	Vahan	Mr	Dr		ASSO	2010-02-17	JINR-VBLHEP	FULL		
Kiryakov	Andrey	Mr			FULL	2013-10-02	IHEP	FULL		
Kiš	Mladen	Mr	Dr		FULL	2004-04-27	GSI	FULL		|CAC|
Kisel	Ivan	Mr	Prof		FULL	2003-01-10	FIAS	FULL		
Kisel	Pavel	Mr		phd	FULL	2012-02-06	IKF-UFra	FULL	GSI, JINR-LIT	
Kiselev	Sergey	Mr	Dr		FULL	2003-01-23	ITEP	FULL		
Kiss	Tivadar	Mr			FULL	2006-01-21	WignerRCP	FULL		
Klaus	Philipp	Mr		phd	FULL	2014-03-24	IKF-UFra	FULL		
Kłeczek	Rafał	Mr	Dr		FULL	2012-01-05	AGH	FULL		
Klein	Dennis	Mr	BSci		ASSO	2018-03-27	GSI	FULL		
Klein-Bösing	Christian	Mr	Dr.habil		FULL	2009-03-18	UMuenster	FULL		|CB-dep|
Klochkov	Viktor	Mr		phd	FULL	2015-10-04	GSI	FULL	IKF-UFra	
Kmon	Piotr	Mr	Dr.habil		FULL	2013-01-09	AGH	FULL		
Koch	Karsten	Mr	Dr		FULL	2004-01-08	GSI	FULL		
Kochenda	Leonid	Mr	Dr		FULL	2010-03-24	PNPI	FULL	MEPhI	
Koczoń	Piotr	Mr	Dr		FULL	2003-01-10	GSI	FULL		
Kohn	Martin	Mr		phd	FULL	2014-07-24	UMuenster	FULL		
Kollegger	Thorsten	Mr	Dr		ASSO	2015-10-09	GSI	FULL		
Kolozhvari	Anatoly	Mr	Eng		FULL	2018-06-09	JINR-VBLHEP	FULL		
Komarov	Vadim	Mr			STAF	2016-10-15	JINR-VBLHEP	FULL		
Komkov	Boris	Mr			FULL	2007-01-29	PNPI	FULL		
Korolev	Mikhail	Mr		phd	FULL	2006-01-21	SINP-MSU	FULL		
Korolko	Ivan	Mr	MSci		FULL	2003-01-23	ITEP	FULL		|PL|CB|
Kot	Olexandr	Mr	MSci	phd	FULL	2017-12-06	KINR	FULL		
Kotte	Roland	Mr	Dr		FULL	2006-01-21	HZDR	FULL		
Kovalchuk	Olexii	Mr			FULL	2008-11-04	KINR	FULL		
Kowalski	Seweryn	Mr	Dr.habil		FULL	2004-01-06	USilesia	ASSO		|CB|
Koziel	Michał	Mr	Dr		FULL	2012-02-23	IKF-UFra	FULL		
Kozlov	Grigory	Mr		phd	FULL	2012-02-06	FIAS	FULL	JINR-LIT	
Kozlov	Vladimir	Mr	Dr		FULL	2014-11-24	PNPI	FULL		
Kramarenko	Viktor	Mr	Dr		FULL	2014-12-04	JINR-VBLHEP	FULL		
Kravtsov	Peter	Mr			FULL	2011-05-13	PNPI	FULL	MEPhI	
Kres	Ievgenii	Mr	MSci	phd	FULL	2015-09-10	UWuppertal	FULL		
Kresan	Dmytro	Mr	Dr		FULL	2005-03-16	GSI	FULL		
Kretz	Matthias	Mr	Dr		ASSO	2010-03-22	GSI	FULL		
Kryanev	Alexandr Vital'evich	Mr	Prof		FULL	2015-04-22	JINR-LIT	FULL	MEPhI	
Kryshen	Evgeny	Mr	Dr		FULL	2004-03-16	PNPI	FULL		
Krzyżanowska	Aleksandra	Ms	MSci	phd	FULL	2013-01-09	AGH	FULL		
Kucewicz	Wojciech	Mr	Prof		FULL	2012-10-11	AGH	FULL		
Kudin	Leonid	Mr			FULL	2007-01-29	PNPI	FULL		
Kugler	Andrej	Mr	Dr		FULL	2004-02-23	NPI-CAS	FULL		|CB|RB|CB-chair-dep|
Kuhl	Peter	Mr	Eng		FULL	2018-09-03	GSI	FULL		
Kumar	Ajit	Mr		phd	FULL	2015-09-24	VECC	FULL		
Kumar	Lokesh	Mr	Dr		FULL	2015-12-17	UPanjab	FULL		
Kundu	Sumit Kumar	Mr		phd	FULL	2018-08-31	IIT-I	FULL		
Kurepin	Alexey	Mr	Prof		FULL	2004-02-23	INR	FULL		
Kurepin	Nikolay	Mr			FULL	2015-12-05	INR	FULL		
Kurilkin	Pavel	Mr	Dr		FULL	2014-03-30	JINR-VBLHEP	FULL		|CB-dep|
Kushpil	Vassilyi	Mr	Dr		FULL	2013-04-09	NPI-CAS	FULL		
Kuznetsov	Sergey	Mr			FULL	2014-12-08	JINR-VBLHEP	FULL		
Kyva	Volodymyr	Mr			FULL	2012-02-10	KINR	FULL		
Ladygin	Vladimir	Mr	Prof		FULL	2004-10-13	JINR-VBLHEP	FULL		|CB|SP-dep|
Ladygina	Nadezhda	Ms	Dr		ASSO	2016-10-15	JINR-VBLHEP	FULL		
Lara	Camilo	Mr	Dr		FULL	2006-01-31	IRI-UFra	FULL		
Lavrik	Evgeny	Mr	Dr		FULL	2012-09-17	UTuebingen	FULL		
Lazanu	Ionel	Mr	Prof		FULL	2008-03-25	UBucharest	FULL		
Lebedev	Andrey	Mr	Dr		FULL	2006-06-22	GSI	FULL	JINR-LIT	
Lebedev	Semen	Mr	Dr		FULL	2005-04-22	UGiessen	FULL	JINR-LIT	
Lebedeva	Elena	Ms	MSci	phd	FULL	2009-09-22	UGiessen	FULL		
Lehnert	Jörg	Mr	Dr		FULL	2014-02-01	GSI	FULL		
Leifels	Yvonne	Ms	Dr		FULL	2004-02-13	GSI	FULL		
Li	Chao	Mr		phd	FULL	2017-02-24	USTC	FULL		
Li	Qiyan	Ms		phd	FULL	2012-02-27	IKF-UFra	FULL	CCNU	
Li	Xin	Mr	Prof		ASSO	2015-12-14	USTC	FULL		
Li	Yuanjing	Mr	Prof		FULL	2008-10-28	THU	FULL		
Lindenstruth	Volker	Mr	Prof		FULL	2004-01-06	FIAS	FULL	GSI	|CB|PL|
Linnik	Benjamin	Mr		phd	FULL	2013-08-08	IKF-UFra	FULL		
Liu	Feng	Mr	Prof		FULL	2012-02-14	CCNU	FULL		
Lobanov	Ivan	Mr			FULL	2009-03-16	IHEP	FULL		
Lobanova	Elena	Ms			FULL	2009-03-16	IHEP	FULL		
Löchner	Sven	Mr	Dr		FULL	2007-02-21	GSI	FULL		
Loizeau	Pierre-Alain	Mr	Dr		FULL	2009-03-05	GSI	FULL		|SPL|
Łojek	Konrad	Mr	Eng		FULL	2017-04-26	UJagiellonian	FULL		
Lucio Martínez	José Antonio	Mr	MSci	phd	FULL	2014-07-21	IRI-UFra	FULL		
Luo	Xiaofeng	Mr	A.Prof		FULL	2015-12-04	CCNU	FULL		
Lymanets	Anton	Mr	Dr		FULL	2007-07-17	GSI	FULL		
Lyu	Pengfei	Mr		phd	FULL	2014-12-18	THU	FULL		
Maevskaya	Alla	Ms			FULL	2003-01-10	INR	FULL		
Mahajan	Sanjay	Mr	Eng		FULL	2010-03-22	UJammu	FULL		
Maj	Piotr	Mr	Dr.habil		FULL	2007-10-01	AGH	FULL		

Majka	Zbigniew	Mr	Prof		FULL	2002-11-15	UJagiellonian	FULL		
Malakhov	Alexander	Mr	Prof		FULL	2004-02-23	JINR-VBLHEP	FULL		
Malankin	Eugeny	Mr		phd	FULL	2014-03-16	MEPhI	FULL		
Mali	Provash	Mr	MSci	phd	FULL	2016-04-26	NBU	ASSO		
Malkevich	Dmitry	Mr	MSci		FULL	2013-10-09	ITEP	FULL		
Malyatina	Olga	Ms	Dr		FULL	2009-03-05	MEPhI	FULL		
Malzacher	Peter	Mr	Dr		STAF	2012-10-11	GSI	FULL		
Mandal	Mitali	Ms	MSci		FULL	2017-02-09	VECC	FULL		
Manko	Vladislav	Mr	Prof		FULL	2004-02-23	NRC-KI	FULL		|CB|
Maragoto Rodriguez	Osnan	Mr		phd	FULL	2018-01-11	GSI	FULL	IKF-UFra	
Marin Garcia	Ana Maria	Ms	Dr		FULL	2013-04-16	GSI	FULL		
Markert	Jochen	Mr	Dr		FULL	2013-04-30	GSI	FULL		
Masciocchi	Silvia	Ms	Dr		ASSO	2013-04-16	GSI	FULL	PI-UHd	
Matulewicz	Tomasz	Mr	Prof		FULL	2006-01-21	UWarsaw	FULL		
Mehta	Shaifali	Ms		phd	FULL	2017-11-08	UTuebingen	FULL		
Merkin	Mikhail	Mr	Dr.habil		FULL	2004-02-23	SINP-MSU	FULL		|CB|
Meyer-Ahrens	Adrian	Mr		ma	FULL	2016-12-14	UMuenster	FULL		
Michel	Jan	Mr	Dr		FULL	2012-12-10	IKF-UFra	FULL		
Miftakhov	Nail	Mr			ASSO	2010-03-24	PNPI	FULL		
Mijatovic	Daniela	Ms		ba	ASSO	2016-11-02	IKF-UFra	FULL		
Mik	Łukasz	Mr	Dr		FULL	2015-12-04	AGH	FULL		
Mikhailov	Konstantin	Mr	Dr		FULL	2004-10-15	ITEP	FULL		
Mikhaylov	Vasily	Mr	Eng	phd	FULL	2013-10-02	NPI-CAS	FULL		
Militsija	Victor	Mr			FULL	2007-10-24	KINR	FULL		
Mir	M. Farooq	Mr	Dr		FULL	2007-10-01	UKashmir	FULL		|CB|
Mishra	Gobinda Chandra	Mr	Prof		FULL	2012-10-05	SMIT	PART		|CP|
Miskowiec	Dariusz	Mr	Dr		FULL	2013-04-16	GSI	FULL		
Mohanty	Bedangadas	Mr	Prof		FULL	2006-01-21	NISER	ASSO		|CB|
Momot	Ievgeniia	Ms	MSci	phd	FULL	2014-10-27	IKF-UFra	FULL	GSI, KINR	
Morel	Frédéric	Mr	Dr		FULL	2017-04-22	IPHC	FULL		
Morhardt	Thomas	Mr			FULL	2014-05-12	GSI	FULL		
Morozov	Sergey	Mr			FULL	2014-12-08	INR	FULL		
Müller	Walter F.J.	Mr	Dr		FULL	2002-11-15	FAIR	FULL	GSI	|TC|
Müntz	Christian	Mr	Dr		FULL	2003-01-16	IKF-UFra	FULL		|PL-dep|
Mukherjee	Sanjoy	Mr	Eng		FULL	2016-05-30	Bose	FULL		
Mukhopadhyay	Amitabha	Mr	Prof		FULL	2016-04-26	NBU	ASSO		|CB|
Munkes	Philipp	Mr		ma	FULL	2016-12-14	UMuenster	FULL		
Murin	Yuri	Mr	Dr		FULL	2006-01-21	JINR-VBLHEP	FULL		
Nandi	Basanta	Mr	Prof		FULL	2016-04-26	IIT-B	ASSO		
Nandi	Chinmoy	Mr			ASSO	2015-04-13	VECC	FULL		
Nandy	Ekata	Ms	MSci	phd	FULL	2014-09-18	VECC	FULL		
Nassar	Mahmoud Hanafy	Mr	MSci	phd	FULL	2016-04-28	ECTP	ASSO	BU	
Naumann	Lothar	Mr	Dr		FULL	2004-10-27	HZDR	FULL		
Nayak	Tapan	Mr	Dr		FULL	2006-01-21	VECC	FULL		
Negi	Vinod Singh	Mr			ASSO	2016-02-02	VECC	FULL		
Niebur	Wolfgang	Mr	Eng		FULL	2004-11-12	GSI	FULL		|PE|SO|PTC|
Nikulin	Vladimir	Mr	Dr		FULL	2006-10-18	PNPI	FULL		|PTC|
Normanov	Dmitry	Mr	Dr		FULL	2014-03-16	MEPhI	FULL		
Oancea	Andrei	Mr	Dipl	phd	FULL	2012-01-09	IRI-UFra	FULL		
Olar	Alex	Mr			FULL	2016-10-10	ELTE	FULL		
Onishchuk	Yury	Mr	A.Prof		FULL	2006-01-30	UKyiv	FULL		
Otfinowski	Piotr	Mr	Dr		FULL	2012-01-05	AGH	FULL		
Otto	Jan Hendrik	Mr	MSci	phd	FULL	2017-12-05	UGiessen	FULL		
Ovcharenko	Egor	Mr		phd	FULL	2012-10-15	UGiessen	FULL	JINR-LIT	
Pan	Liang-ming	Mr	Prof		FULL	2017-09-27	UChongqing	FULL		|CB|
Panasenko	Iaroslav	Mr	MSci	phd	FULL	2008-11-04	UTuebingen	FULL	KINR	
Parzhitskiy	Stanislav	Mr			FULL	2012-02-08	JINR-VBLHEP	FULL		
Patel	Vivek	Mr	MSci	phd	FULL	2016-03-23	UWuppertal	FULL		
Pauly	Christian	Mr	Dr		FULL	2010-04-21	UWuppertal	FULL		|PL-dep|CB-dep|
Peshekhonov	Dmitri	Mr	Dr		ASSO	2004-04-27	JINR-VBLHEP	FULL		
Petráček	Vojtěch	Mr	Dr.habil		FULL	2003-08-25	CTU	FULL		|CB|
Petri	Michael	Mr			FULL	2015-12-02	IKF-UFra	FULL		
Petriş	Mariana	Ms	Dr		FULL	2006-01-21	IFIN-HH	FULL		
Petrovici	Mihai	Mr	Prof		FULL	2003-08-25	IFIN-HH	FULL		|CB|RB|PL-dep|
Petukhov	Oleg	Mr			FULL	2012-02-06	INR	FULL		
Pfeifer	Dennis	Mr	Eng		FULL	2014-11-27	UWuppertal	FULL		
Pfistner	Patrick	Mr		phd	STAF	2018-04-26	KIT	FULL		
Pham	Hung	Mr	Dr		FULL	2017-04-22	IPHC	FULL		
Piasecki	Krzysztof	Mr	Dr.habil		FULL	2006-01-04	UWarsaw	FULL		|PB|CB|
Pietraszko	Jerzy	Mr	Dr		FULL	2004-05-05	GSI	FULL		|TB|TB|
Pitsch	Gregor	Mr	BSci	ma	FULL	2017-11-08	UGiessen	FULL		
Płaneta	Roman	Mr	Prof		FULL	2012-11-19	UJagiellonian	FULL		
Plotnikov	Vasiliy	Mr	MSci		FULL	2013-10-09	ITEP	FULL		
Plujko	Vladimir	Mr	Prof		FULL	2006-01-21	UKyiv	FULL		
Pluta	Jan	Mr	Prof		FULL	2013-04-22	TUWarsaw	FULL		
Poźniak	Krzysztof	Mr	A.Prof		FULL	2012-09-16	TUWarsaw	FULL	UWarsaw	
Prasad	Sidharth Kumar	Mr	A.Prof		FULL	2016-03-31	Bose	FULL		
Prokudin	Mikhail	Mr	Dr		FULL	2006-01-21	ITEP	FULL		
Pugach	Mykhailo	Mr	MSci	phd	FULL	2014-03-21	FIAS	FULL	GSI, KINR	
Pugatch	Valery	Mr	Prof		FULL	2007-05-07	KINR	FULL		|CB|RB|
Querchfeld	Sven	Mr	Dipl	phd	FULL	2009-10-14	UWuppertal	FULL		
Radulescu	Laura	Ms	Dr		FULL	2014-05-16	IFIN-HH	FULL		
Raha	Sibaji	Mr	Prof		FULL	2012-04-03	Bose	FULL		|CB|
Raja	Waseem	Mr			FULL	2011-03-28	UKashmir	FULL		
Ramazanov	Dmytro	Mr	MSci	phd	FULL	2017-12-06	KINR	FULL		
Raportirenko	Anatoly	Mr			STAF	2006-01-21	JINR-LIT	FULL		
Rautenberg	Julian	Mr	Dr		FULL	2008-11-28	UWuppertal	FULL		
Ray	Rajarshi	Mr	A.Prof		FULL	2012-04-03	Bose	FULL		
Redelbach	Andreas	Mr	Dr		FULL	2018-07-27	FIAS	FULL		
Reinefeld	Alexander	Mr	Prof		FULL	2014-11-20	ZIB	FULL		|CB|
Reinhardt	Julian	Mr	MSci		ASSO	2017-05-03	FIAS	FULL		
Reshetin	Andrey	Mr	Dr		FULL	2006-01-21	INR	FULL		
Reznikov	Sergey	Mr			ASSO	2016-10-15	JINR-VBLHEP	FULL		
Riesen	Cornelius	Mr	BSci	ma	FULL	2017-12-05	UGiessen	FULL		
Ristea	Cătălin	Mr	Dr		FULL	2012-02-09	UBucharest	FULL		
Ristea	Oana	Ms	Dr		FULL	2012-02-09	UBucharest	FULL		
Rodriguez Rodriguez	Adrian	Mr		phd	FULL	2015-05-08	GSI	FULL		
Roether	Florian	Mr	Dipl	phd	FULL	2013-08-08	IKF-UFra	FULL		

Romaniuk	Ryszard	Mr	Prof		FULL	2012-12-19	TUWarsaw	FULL		|CB|
Rost	Adrian	Mr	MSci	phd	FULL	2013-04-26	IKP-TUD	FULL		
Rostchin	Evgeny	Mr			FULL	2007-01-29	PNPI	FULL	MEPhI	
Roy	Ankhi	Mr	Dr		FULL	2016-10-21	IIT-I	FULL		
Roy	Shreya	Ms	MSci	phd	FULL	2018-01-19	Bose	FULL		
Ryabov	Yury	Mr	Dr		FULL	2004-01-21	PNPI	FULL		
Rybakov	Alexander	Mr			ASSO	2016-10-15	JINR-VBLHEP	FULL		
Rybalchenko	Alexey	Mr	MSci		ASSO	2018-03-27	GSI	FULL		

Sahoo	Raghunath	Mr	A.Prof		FULL	2014-04-10	IIT-I	FULL		|CB|
Sahu	Pradip Kumar	Mr	A.Prof		FULL	2006-09-27	IOPB	FULL		|CB|
Sahu	Sanjib Kumar	Mr	Eng		FULL	2015-12-12	IOPB	FULL		
Saini	Jogender	Mr	MTech	phd	FULL	2006-01-21	VECC	FULL		
Salem	Farouk	Mr			FULL	2016-12-14	ZIB	FULL		
Samanta	Subhasis	Mr	Dr		FULL	2013-04-03	NISER	ASSO		
Sambyal	Sanjeev Singh	Mr	Dr		FULL	2007-10-01	UJammu	FULL		
Samsonov	Vladimir	Mr	Prof		FULL	2005-03-18	PNPI	FULL	MEPhI, SPbPU	|CB|
Sander	Oliver	Mr	Dr		FULL	2014-09-11	KIT	FULL		
Sarangi	Satunu	Mr		phd	FULL	2014-12-09	IIT-KGP	FULL		
Sarkar	Soumya	Mr	MSci	phd	FULL	2016-04-26	NBU	ASSO		
Sau	Suman	Mr		phd	FULL	2014-07-11	UCalcutta	FULL		
Sauter	Dennis	Mr		ma	ASSO	2018-03-08	PI-UHd	FULL		
Schiaua	Claudiu	Mr	MSci		FULL	2009-02-25	IFIN-HH	FULL		
Schintke	Florian	Mr	Dr		FULL	2015-03-05	ZIB	FULL		|CB-dep|
Schmidt	Christian Joachim	Mr	Dr		FULL	2007-01-25	GSI	FULL		|EC|
Schmidt	David	Mr	BSci		ASSO	2018-03-06	IRI-UFra	FULL		
Schmidt	Hans Rudolf	Mr	Prof		FULL	2009-11-05	UTuebingen	FULL		|CB|PL|COB-chair|
Schneider	Patrick	Mr	BSci	ma	ASSO	2016-03-30	UMuenster	FULL		
Schreiber	Stefan	Mr			ASSO	2017-03-30	IKF-UFra	FULL		
Schütt	Thorsten	Mr	Dr		FULL	2016-12-14	ZIB	FULL		
Schweda	Kai	Mr	Dr		ASSO	2005-09-20	GSI	FULL		
Seck	Florian	Mr	MSci	phd	FULL	2013-11-08	IKP-TUD	FULL		
Selyuzhenkov	Ilya	Mr	A.Prof		FULL	2013-04-16	GSI	FULL	MEPhI	|PB|PC|
Semchukova	Tatiana	Ms			ASSO	2018-06-13	JINR-VBLHEP	FULL		
Semennikov	Alexander	Mr	MSci	phd	FULL	2009-03-03	ITEP	FULL		
Senger	Anna	Ms	Dr		FULL	2004-04-08	GSI	FULL		
Senger	Peter	Mr	Prof		FULL	2002-11-15	GSI	FULL	IKF-UFra	|PL|MB|
Sett	Priyanka	Ms	Dr		FULL	2016-04-26	IIT-B	ASSO		
Shabanov	Arseniy	Mr		phd	FULL	2014-12-08	INR	FULL		
Shabunov	Alexey	Mr			FULL	2012-02-06	JINR-VBLHEP	FULL		
Shao	Ming	Mr	Prof		ASSO	2006-01-21	USTC	FULL		
Sheremetiev	Alexey D.	Mr			FULL	2015-03-12	JINR-VBLHEP	FULL		
Shi	Shusu	Mr	A.Prof		FULL	2015-12-04	CCNU	FULL		
Shitenkow	Mikhail	Mr	Eng		FULL	2018-06-09	JINR-VBLHEP	FULL		
Shumikhin	Vitaly	Mr	Dr		FULL	2010-04-06	MEPhI	FULL		
Sibiryak	Iouri	Mr	Dr		FULL	2015-12-13	NRC-KI	FULL		
Sidorenko	Vladimir	Mr	MSci		FULL	2016-12-07	KIT	FULL		
Sikora	Brunon	Mr	Dr		FULL	2004-01-06	UWarsaw	FULL		
Simon	Christian	Mr	MSci	phd	FULL	2012-02-10	PI-UHd	FULL		
Simons	Carmen	Ms	Eng		FULL	2010-04-28	GSI	FULL		
Singh	Ajay Kumar	Mr	A.Prof		FULL	2006-09-27	IIT-KGP	FULL		
Singh	Bhartendu Kumar	Mr	Prof		FULL	2006-10-12	UBanaras	FULL		|CB|
Singh	Chandra Prakash	Mr	Prof		FULL	2006-10-12	UBanaras	FULL		
Singh	Omveer	Mr		phd	FULL	2017-04-13	AMU	FULL		
Singh	Ranbir	Mr	Dr		FULL	2018-03-22	NISER	ASSO		
Singhal	Vikas	Mr	MTech		FULL	2006-01-21	VECC	FULL		
Sitzmann	Philipp	Mr	MSci	phd	FULL	2014-07-31	IKF-UFra	FULL		
Škoda	Libor	Mr	Eng		FULL	2006-01-21	CTU	FULL		
Som	Indranil	Mr		phd	FULL	2014-04-13	IIT-KGP	FULL		
Spicker	Dennis	Mr	BSci	ma	ASSO	2018-02-06	IKF-UFra	FULL		
Stach	Daniel	Mr	Eng		FULL	2017-02-09	HZDR	FULL		
Staszel	Paweł	Mr	Dr.habil		FULL	2003-08-25	UJagiellonian	FULL		|CB|RB|
Storozhyk	Dmytro	Mr	Eng		FULL	2008-11-04	KINR	FULL		
Streletskaya	Ekaterina	Ms	Eng		ASSO	2018-06-13	JINR-VBLHEP	FULL		
Strikhanov	Michael	Mr	Prof		FULL	2008-02-18	MEPhI	FULL		
Stroth	Joachim	Mr	Prof		FULL	2003-01-16	IKF-UFra	FULL	GSI	|CB|MB|PL|PB|
Stüllein	Christian	Mr	Dipl	phd	ASSO	2014-12-16	IRI-UFra	FULL		
Sturm	Christian	Mr	Dr		FULL	2004-02-27	GSI	FULL		|CB|PL|
Sultanov	Rishat	Mr		phd	FULL	2013-10-09	ITEP	FULL		
Sun	Yongjie	Mr	Dr		FULL	2009-03-18	USTC	FULL		|CB|
Svirida	Dmitry	Mr			FULL	2015-12-14	ITEP	FULL		
Svoboda	Ondřej	Mr	Dr		FULL	2012-02-10	NPI-CAS	FULL		
Szczygieł	Robert	Mr	Dr.habil		FULL	2007-05-04	AGH	FULL		|CB|
Tang	Zebo	Mr	Prof		ASSO	2009-03-18	USTC	FULL		
Taranenko	Arkadiy	Mr	A.Prof		FULL	2017-01-30	MEPhI	FULL		
Tarassenkova	Olga	Ms			FULL	2006-01-21	PNPI	FULL		
Tawfik	Abdel Nasser	Mr	Prof		FULL	2016-04-28	ECTP	ASSO		|CB|
Tlustý	Pavel	Mr	Dr		FULL	2004-05-05	NPI-CAS	FULL		
Tölyhi	Tamás	Mr			FULL	2006-01-21	WignerRCP	FULL		
Toia	Alberica	Ms	Prof		FULL	2013-11-18	GSI	FULL	IKF-UFra	
Topil'skaya	Nataliya	Mr	Dr		FULL	2006-01-21	INR	FULL		
Träger	Michael	Mr			FULL	2015-03-12	GSI	FULL		
Traxler	Michael	Mr	Dr		STAF	2014-02-05	GSI	FULL		
Tsyupa	Yuri	Mr			FULL	2009-03-16	IHEP	FULL		
Tuturas	Nicolae George	Mr		phd	FULL	2014-11-25	UBucharest	FULL		
Uhlig	Florian	Mr	Dr		FULL	2006-01-21	GSI	FULL		|SPL|
Usenko	Evgueni	Mr			FULL	2010-03-24	INR	FULL		
Valin	Isabelle	Ms	Dr		FULL	2006-01-21	IPHC	FULL		
Varga	Dezső	Mr	Dr		FULL	2014-11-20	WignerRCP	FULL		
Vassiliev	Iouri	Mr	Dr		FULL	2004-10-13	GSI	FULL		|PB|
Vasylyev	Oleg	Mr			FULL	2015-09-10	GSI	FULL		
Verbitskaya	Elena	Ms	Dr		FULL	2012-02-28	Ioffe	ASSO		
Veshikov	Andrey	Mr			FULL	2012-02-10	KRI	ASSO		
Visinka	Robert	Mr			FULL	2014-05-12	GSI	FULL		
Völkl	Martin	Mr	Dr		FULL	2017-03-01	UTuebingen	FULL		
Volkov	Sergei	Mr			ASSO	2007-01-29	PNPI	FULL		
Volkov	Vladimir	Mr			ASSO	2012-10-11	SINP-MSU	FULL		
Volkova	Elena	Ms	MSci	phd	FULL	2017-11-14	UTuebingen	FULL		
Volochniuk	Andrii	Mr	MSci	phd	FULL	2014-12-07	UKyiv	FULL		
Vorobiev	Alexander	Mr	Dr		FULL	2009-03-16	IHEP	FULL		|CB|
Voronin	Aleksey	Mr	Eng		STAF	2015-11-04	JINR-VBLHEP	FULL		
Voronin	Alexander	Mr	Dr		FULL	2004-01-08	SINP-MSU	FULL		
Vznuzdaev	Marat	Mr	Dr		ASSO	2011-05-13	PNPI	FULL		
Wang	Dong	Mr	A.Prof		FULL	2012-02-14	CCNU	FULL		
Wang	Yi	Mr	Prof		FULL	2008-10-28	THU	FULL		|CB|
Weber	Adrian Amatus	Mr	MSci	phd	FULL	2015-04-29	UGiessen	FULL		
Weber	Marc	Mr	Prof		FULL	2014-09-11	KIT	FULL		

Weber	Ruben	Mr		ba	ASSO	2018-01-25	UMuenster	FULL		
Weidenkaff	Philipp	Mr	MSci	phd	FULL	2015-05-11	PI-UHd	FULL		
Wessels	Johannes P.	Mr	Prof		FULL	2004-01-06	UMuenster	FULL		
Wielanek	Daniel	Mr	MSci	phd	FULL	2013-07-19	TUWarsaw	FULL		
Wieloch	Andrzej	Mr	Dr.habil		FULL	2013-01-08	UJagiellonian	FULL		
Wilms	Andrea	Ms	Dr		FULL	2016-05-10	GSI	FULL		
Winter	Marc	Mr	Dr		FULL	2003-01-16	IPHC	FULL		|CB|RB|
Wolf	György	Mr	Dr.habil		FULL	2012-06-06	WignerRCP	FULL		|CB|RB|
Wu	Ke-Jun	Mr	A.Prof		FULL	2015-05-05	CTGU	FULL		
Wu	Qiqi	Ms	MTech		FULL	2017-10-09	UChongqing	FULL		
Xu	Nu	Mr	Prof		FULL	2012-02-14	CCNU	FULL	NISER	|RB|PB|CB-chair|
Yang	Junfeng	Mr	Dr		FULL	2014-12-23	USTC	FULL		
Yang	Rongxing	Mr		phd	FULL	2015-12-14	USTC	FULL		
Yin	Zhongbao	Mr	Prof		FULL	2006-01-21	CCNU	FULL		
Yoo	In-Kwon	Mr	Prof		FULL	2003-01-21	PNU	FULL		|CB|RB|
Yuan	Jianhui	Mr		ma	FULL	2017-02-24	USTC	FULL		
Yuldashev	Bekhzod	Mr	Prof		ASSO	2014-04-04	JINR-VBLHEP	FULL		
Yushmanov	Igor	Mr			FULL	2006-01-21	NRC-KI	FULL		
Zabołotny	Wojciech	Mr	Dr		FULL	2012-09-16	TUWarsaw	FULL	UWarsaw	|MB|
Zaitsev	Yuri	Mr	Prof		FULL	2007-10-04	ITEP	FULL		|COB|RB|
Zamiatin	Nikolay I.	Mr	Dr		FULL	2015-03-12	JINR-VBLHEP	FULL		
Zhalov	Michael	Mr	Dr		FULL	2006-01-21	PNPI	FULL		
Zhang	Qiunan	Ms		phd	FULL	2018-04-27	THU	FULL		
Zhang	Yu	Mr	BSci	phd	FULL	2016-10-21	CCNU	FULL		
Zhao	Yan-Qing	Mr	MSci	phd	FULL	2017-12-07	CTGU	FULL		
Zhao	Yüe	Mr		phd	FULL	2017-04-22	IPHC	FULL		
Zheng	Sheng	Mr	Prof		FULL	2015-05-05	CTGU	FULL		
Zhou	Daicui	Mr	Prof		FULL	2006-01-09	CCNU	FULL		|CB|
Zhou	Jian	Mr		ma	FULL	2017-02-24	USTC	FULL		
Zhou	Wenxiong	Mr	Dr		FULL	2017-05-03	GSI	FULL	UChongqing	
Zhu	Xianglei	Mr	Prof		FULL	2008-10-28	THU	FULL		
Zimbelius	Annette	Ms			STAF	2012-09-16	GSI	FULL		
Zinchenko	Alexander	Mr	Dr		FULL	2008-02-23	JINR-VBLHEP	FULL		
Zivko	Irina	Mr	Dr		FULL	2008-04-30	ITEP	FULL		
Żołądź	Mirosław	Mr	Dr		FULL	2009-02-25	AGH	FULL		
Zrelov	Petr	Mr	Dr		ASSO	2004-10-13	JINR-LIT	FULL		
Zryuev	Vladislav	Mr			ASSO	2010-01-22	JINR-VBLHEP	FULL		
Zubrzycka	Weronika	Ms	MSci	phd	FULL	2016-12-06	AGH	FULL		
Zumbruch	Peter	Mr	Dr		FULL	2004-03-03	GSI	FULL		
Zyzak	Maksym	Mr	Dr		FULL	2009-09-22	GSI	FULL		|SPL|

Annex 3b: Organisation rules of the CBM Collaboration, Management structure of the CBM Collaboration, Management Board members and of persons holding management positions in the CBM Collaboration

CBM Organization Rules

DRAFT, Revised February 27 th, 2018, prepared for CB voting at CBM Collaboration Meeting at Darmstadt March 19 th-23 rd, 2018

Contents

1 General

1.1 Preamble

The Compressed Baryonic Matter (**CBM**) Collaboration (referred to in this document as the "Collaboration") is an association of institutes with the goal to construct, maintain and operate the CBM detector at the Facility of Antiproton and Ion Research (**FAIR**). On completion of the detector contruction the Collaboration will collect and analyze data and publish the results in scientific journals.

The CBM collaboration adopts the rules layed out in this document as the authority governing the membership and the management of the Collaboration.

1.2 Membership in the Collaboration

Member Institutions (universities, laboratories, institutes) of the Collaboration are all those which have been accepted as such by the Collaboration Board (CB). The Member Institutions nominate individuals (scientists, engineers, technicians and students) contributing to CBM as members of the Collaboration. Individuals can be removed from the collaboration list one year after terminating their engagement with the Collaboration. Each Member Institution has to designate a **Team Leader** and a **Deputy Temleader** from amongst its team members. The Team Leader represents the Member Institution in the CB.

The **group size of Member Institutions** relevant for accounting, voting rights and service tasks is defined by the number of PhD holders amongst the Collaboration members.

Individual members of the CBM collaboration can be designated as **Member Emeritus** upon recommendation by the spokesperson and approval by the CB. A Member Emeritus will continue to be a full member of the CBM collaboration. The Member Emeritus status designation is reserved for those individual members who have served the CBM collaboration with distinction over an extend period.

1.2.1 New Members of the Collaboration

The candidature of a new institution is first considered by the Management Board (MB). Once the MB decides that sufficient information is available on its intended participation, the MB presents the candidature to the CB for endorsement. Each new member institution has to commit a significant contribution to CBM by taking the responsibility for a soft- or hardware related Work Package (WP) as defined by the Technical Coordination and endorsed by the CB.

1.2.2 Associate Membership

The status of **Associate Member Institution/Associate Member** of the Collaboration may be granted to institutions or individual members of institutiuons which are not, or not yet, able to enter into a long-term commitment to the experiment. Members of Associate Member Institutions will normally not be included as authors of publications of the Collaboration, but may be included as authors, with an appropriate footnote, in papers related to their field of activity. Associate Member Institutions do not have the right to vote in the CB. The mechanism for admission of Associate Member Institutions is the same as for ordinary Member Institutions

of the Collaboration. The status of the Associate Membership is reviewed by the CB on a regular basis or on request of the associate member.

1.2.3 Rights and Obligation of Members

All members of the collaboration have the right to access data taken by the experiment. The analysis and simulation code repository is available for all members for use and for review. The group leaders of member institutions have to ensure that **service tasks** to the collaboration are performed. Service tasks are defined by the Physics and/or Technical Board (PB, TB) and includes in particular data taking shifts. All groups have to participate in service tasks in proportion to the group size (as defined above).

1.2.4 Non-Fulfilment of Obligations

If a Member Institution does not fulfil the obligations specified in and agreed on in the Construction MoU (**see Annex H**) or of decisions of the CB, the Management Board will consider the case and recommend a decision to the CB. Among the decisions of the CB in such cases may be the alteration to Associate Membership, and, ultimately, the exclusion of the Institution from the Collaboration. In all such cases, the representative of the Member Institution concerned must be given the opportunity to be heard.

2 Collaboration Meetings

The Collaboration assembles for Collaboration Meetings twice a year. The duration of the collboration meeting is typically one week ("CBM week"). The structure of the Collaboration Meeting is as follows:

- **Plenary Sessions**, organized by the Spokesperson. The Plenary Session include reports from the Physics Working Group (PWG) Conveners, and reports from the Physics, Computing, Technical, Conference&Editoral and Resource Board Coordinators;
- **Parallel Sessions**, organzied by the Project Leaders. The Parallel Session include reports from the different projects;
- **Board Meetings**, organized by the chairs of the respective Board;
- a **Juniors Meeting**, organized by the Junior Representative (cf. Sect. 3.4).

Plenary and Parallel Session are open to all members of the collaboration. Boards meetings are open to the members of the boards and by invitation.

3 Collaboration Board

3.1 Role

The Collaboration Board (CB) (**see Annex A**) is the policy and decision making body of the Collaboration. The CB assembles during the Collaboration meetings. Additional meetings may be called by the CB Chairperson as the need arises.

3.2 Collaboration Board Chair and Deputy

The **Collaboration Board Chair** shall schedule, set the agenda for, and preside at all meetings of the Collaboration Board. The **Collaboration Board Chair Deputy** provides support to the Collaboration Board Chair and has the power to act in place of the Collaboration Board Chair when designated by the Collaboration Board Chair to do so. Collaboration Board Chair and the Deputy shall not represent any country or activity within CBM.

3.3 Membership

The CB is composed of one representative, usually the Team Leader, from each Member Institution. CB Members may appoint a voting representative (proxy), who represents the Member Institution in a particular CB meetings instead of its Team Leader. Voting representatives can carry up to two procurations in addition to their own vote. Institutions with less then two PhD holders have no vote in the the CB. They can group with other Member Institutions and have a common vote if their members together are three or more PhD holders. Each Member Institution has one vote in the CB, except for the Junior Representative (cf. Sec. 3.4), who has two votes. Representavies of Associate Member Institutions are not counted for the quorum and have no right to vote.

All members of the Management Board and of the Operational Boards are ex-officio Members of the CB (cf. Sect. 4). Ex-officio members of the CB do not have the right to vote in the CB, unless they are the representative of a Member Institution.

3.4 Junior Members

A representative of the **Juniors Members Assembly** represents the interest of the younger CBM members in the the Collaboration. The Junior Member Assembly elects a representative with a simple majority. The Junior Representaive (JR) is ex officio member of the CB and carries two votes. Junior Members of CBM are graduate students and PhDs holding their degree for less then four years. The JR invites for Meetings of the Junior Members Assembly during CBM weeks.

3.5 Decision and Elections Procedures

The decisions of the CB are taken by consensus whenever possible or otherwise by vote. All votes are open except for elections and on request of a CB member.

The CB Members with voting rights (including procurations) and the JR constitute the **Eligible Voting Members**.

- Any change of the CBM Organization Rules always needs a **2/3 majority of the votes of the Eligible Voting Members**;
- the election procedure of the CBM CB chairperson and CBM spokesperson is detailed below;
- other elections and decisions taken by the CB require a **quorum of at least 50%** of the votes of the Eligible Voting Members and are taken by a simple majority.

If a situation should arise where a decision cannot be reached by vote, a timetable shall be set for the decision to be reached at a subsequent meeting of the CB, but not before a minimum delay of 24 hours. The matter will then be decided if necessary by a simple majority of the Institutions represented.

Nomination and Election Procedure for CB Chair and the Spokespesron The CB elects the CB Chair and Spokesperson and endorses their deputies. The process leading to the nomination of candidates is organized by the CB Chair, in consultation with the CB members and with the FAIR Management. In case of conflict of interest, the nomination of candidates is organized by the CB Chair deputy or the most senior member of the CB. The CB Chair charges a **search committee** to find suitable candidates well before the elections. The search committee shall be nominated in the CBM week proceeding the one in which the election is foreseen to take place. Candiates for the CB Chair or the Spokesperson may be proposed by the members of the CB, but need at least the support of two CB Member Institutions.

The election of the CB Chair and of the Spokesperson follows the same procedure:

The candiate is elected with the absolute majority of the eligible votes. If there is more than one candidate, and neither has reached the absolute majority of the eligible votes, the candiate with the lowest number of votes has to withdraw. This procedure is repeated until one candidate remains. This candiate has to be elected with the absolute majority of the eligible votes.

If no valid election is reached, the election is postponed to the next Collaboration Meeting and the present CB Chair (Spokesperson) acts as interim CB Chair (Spokesperson) or nominates an interim CB Chair (Spokesperson), who is typically one of the Deputies.

The **term of office** for the CB Chair (Spokesperson) is three years and is renewable once.

The CB Chair (Spokesperson) nominates a Deputy CB Chair (Deputy Spokespersons) after due consultation with the Collaboration. The Deputy Chairperson (Deputy Spokesperson) is then endorsed by the CB. The term of office is the same as for the CB Chair (Spokesperson).

The Spokesperson may nominate a second Deputy Spokespersons, who is then endorsed by the CB.

3.6 Agenda and Minutes

The agenda of the CB is prepared by the CB Chair in consultation with the Spokesperson. Any member of the CB may request additional topics to be included. The agenda has to be sent to the CB members at least two weeks in advance of the respective meeting.

Voting on topics not included in the agenda will not be accepted.

The proceedings of the CB are recorded in minutes. Draft minutes are circulated to the members of the CB for approval at the next meeting.

4 Management Structures and Functions

The management structure includes the following functions:

- Spokesperson and its Deputy;
- Management Board;

- Operational Boards, i.e., Technical, Resource, Physics, Computing and Conference & Editoral Board and their Coordinators;
- other Coordinators with various functions;
- major projects and their Project Leaders.

4.1 Spokesperson and Deputies

The Spokesperson:

- coordinates the execution of the CBM project and reports to the CB;
- shall not represent any country or activity within CBM;
- takes all necessary decisions in close consultation with MB and CB;
- represents the CBM Collaboration to the FAIR Committees, to the FAIR Management and to the outside world.
- may appoint review committees and task forces to receive advice on technical and scientific issues, if needed.
- nominates, in consultation with the FAIR Management, the Coordinators, in particular: a Technical, a Physics, a Resource, Conference & Editoral Board and a Computing Coordinator. The Coordinators chair the respective boards and have to be endorsed by the MB and the CB.

The Deputy Spokespersons:

- provides support to the Spokesperson in the management of the collaboration;
- has the power to act in place of the Spokesperson when designated by the Spokesperson or the Collaboration Board Chair to do so.

4.2 Management Board

The Management Board (MB, see Annex B) is chaired by the CBM Spokesperson. The spokesperson invites for Board meetings on a regular basis. Minutes of the MB shall be made available to the collaboration. The issues discussed and the recommendation or decisions of the MB shall be reported to the Collaboration Board by the Spokesperson. The MB:

- supervises the progress of the experiment along the lines defined by the CB;
- it prepares decisions and make recommendations to the CB;
- it appoint review committees and task forces to provide advice on technical, scientific and technological issues;
- interacts with the FAIR Management regarding all issues considered of major importance for the Collaboration;
- reports to the collaboration at the CBM Collaboration Meetings;
- distributes minutes of the meeting to the CB members.

Membership MB The candidates are nominated by the CB Chairperson on consultation with the Collaboration and the Spokesperson taking into account topical and geographical spread. Members of the MB have to be endoresed by the CB. The term of office is three years and is renewable several times. The number of MB members is limited to four, in addition to the ex offico members.

Ex officio Members of the MB are the Spokesperson and its Deputies, Collaboration Board Chair and Deputy and the Chairpersons of all Boards (Technical Board, Resource Board, Physics Board, Software Board and Conference & Editoral Board).

4.3 Operational Boards and Coordinators

The Coordinators are nominated by the Spokesperson in consultation with the FAIR management, and have to be endorsed by the MB and the CB. The appointments of Coordinators are valid for three years. Their terms can re-newed several times. More than one function may be held simultaneously unless the CB considers that there is a conflict of interest. However, the Spokesperson cannot be Coordinator or Project Leader at the same time.

4.3.1 Technical Board

The CBM Technical Board (TB, see Annex C) is chaired by the CBM Technical Coordinator (TC). The TC invites for board meetings on a regular basis. The TC is ex-officio member of the Collaboration Board and Management Board.The TB:

- assesses all technical aspects of the CBM detector, i.e., co-ordinates and monitors the design, construction and installation of the detectors of the CBM Experiment;
- presents technical decisions having important implications for the CBM detector to the CB for endorsement;
- reports to the collaboration at the Collaboration Meetings;
- is responsible for the CBM Technical Documents Database.

Membership TB The TB is composed of the Technical Coordinator and Project Leaders and Project Coordinators. Ex-officio members are the Spokesperson, the Deputy Spokespersons and the other Coordinators. The Technical Coordinator can enlarge the composition of the TB to include other members of CBM having important technical responsibilities.

4.3.2 Physics Board

The Physics Board (PB, see Annex D) is chaired by the Physics Coordinator (PC). The PC invites for board meetings on a regular basis. The PC is ex-officio member of the Collaboration Board and the Management Board. The PB:

- coordinates and assesses activities concerning physics topics of interest, including simulations and optimization of physics performance of CBM;
- coordinates all analysis and simulation related issues, including the corresponding software issues;

- coordinates, in close collaboration with the TC and the Editorial Board the CBM publications and internal notes;
- nominates, in consultation with the Spokesperson and endorsement by the MB the conveners of the Physics Working Groups (PWGs)

Membership PB The PB is composed of the Physics Coordinator and of the conveners of the PWGs. Ex-officio members are the Spokesperson, the Deputy Spokespersons and the other Coordinators.The PC can enlarge the composition of the PB to include other members of CBM having important responsibilities related to physics or simulation issues.

4.3.3 Computing Board

The Computing Board (CPB, see Annex E) is chaired by the Computing Coordinator (CC). The CC invites for board meetings on a regular basis. The CC:

- oversees the computing resources of the experiment;
- coordinates and assesses the development of all software relevant for the operation of the experiment and the data analysis;

Membership CPB The CPB is composed of the Computing Coordinator, representatives of computing subprojects and representaves of computing centers related to CBM. Ex-officio members are the Spokesperson, the Deputy Spokespersons and the other Coordinators.The CC can enlarge the composition of the CPB to include other members of CBM having important responsibilities related to on- or offline related software issues.

4.3.4 Resources Board

The Resources Board (RB, see Annex F) is chaired by the CBM Resources Coordinator (RC).The RC is ex-officio member of the Collaboration Board and Management Board.

The RB :

- deals with matters related to the funding of detectors and systems, resources and person-power of CBM;
- evaluates the intended contributions of the Member Institutes
- deals with the relations to the different national funding agencies and ministries;
- prepares the CBM Resource Review Board meetings, which are organized by FAIR;
- is involed in the negotiations on the funding which is agreed and laid down in the construction Memorandum of Understanding;
- is responsible for the implementation of the Common Fund and for the drafting and maintaining of the Construction and M&O MoUs.

RB decisions with important implications for the Collaboration must be presented to the CB for endorsement.

Membership RB The RB it is composed by at least one representative for each country, who act(s) as the link person(s) to the national funding agency(ies). Ex-officio members are the CB Chairperson and Deputy, the Spokesperson and Deputy Spokespersons and other Coordinators.

4.3.5 Conference & Editorial Board

The Conference & Editorial Board (CEB, see Annex G) is chaired by the CBM Conference & Editorial Coordinator (CEC).The CEC is ex-officio member of the Collaboration Board and the Management Board.

The Conference & Editorial Board:

- coordinates in consultation with the Physics, Computing, and/or the Technical Coordinator the call for and the selection of CBM speakers and poster presentations;
- is responsible for the internal referring and approval of publications and contributions to conferences (proceedings);
- the selection of speakers for invited, plenary presentations at major conferences has to be endorsed by the MB.

Membership CEB Ex-officio members are the CB Chairperson and Deputy, the Spokesperson and Deputy Spokespersons and other Coordinators. The CEB can nominate up to four members to the CEB. They have to be endorsed by the MB.

4.4 Coordinators

The Spokesperson may nominate further Coordinators such as DAQ Coordinator, Engineering and Integration Coordinator, FEE Coordinator, Controls Coordinator, Experimental Area Coordinators, etc.. The Coordinators have to be endorsed by the CB and MB. Coordinators may appoint a deputy in consultation with the Spokespersons and the MB.

4.5 Project Leaders

Project Leaders are nominated by consensus of the institutes participating in the project. Project Leaders must be endorsed by the MB. The Project Leaders may nominated a Deputy acting as Project Coordinator.

5 Appendices

A Collaboration Board Members

Collaboration Board Chair

Collaboration Board Deputy Chair

Institutional Members:

Collaboration Board Institute Representatives

Ex Officio Members:

Spokesperson

Deputy Spokespersons

Technical Coordinator

Resource Coordinator

Physics Coordinator

Computing Coordinator

Conference & Editorial Board Coordinator

Junior Representative

B Management Board

Management Board Chair

Management Board Members

C Technical Board

Technical Board Chair

Technical Board Deputy

Technical Board Members, except ex officio members

D Physics Board

Physics Board Chair

Physics Board Members, except ex officio members

E Computing Board

Computing Board Chair

Computing Board Members, except ex officio members

F Resource Board

Resource Board Chair

Resource Board Members, except ex officio members

G Conference & Editorial Board

Conference & Editorial Board Chair

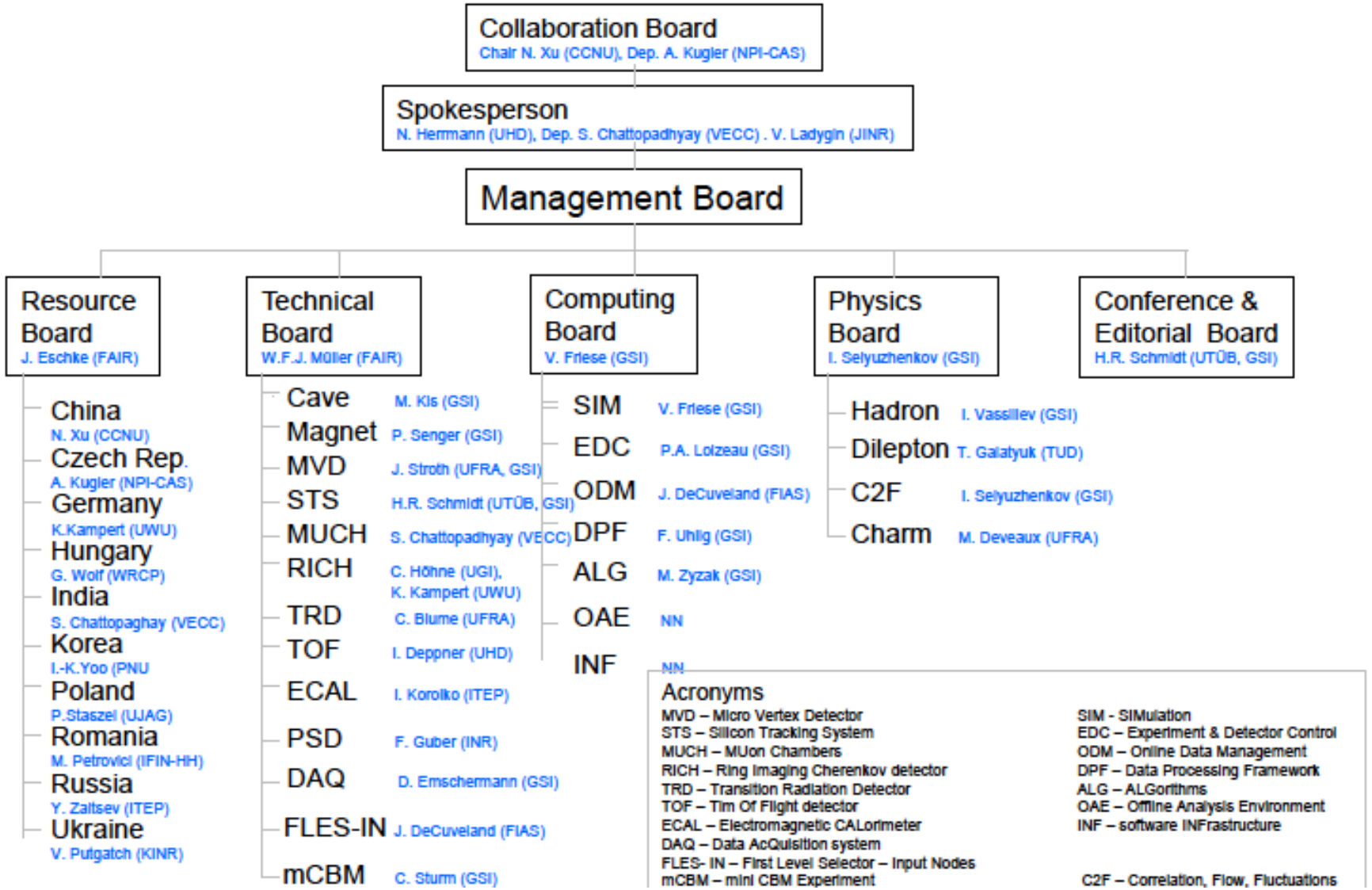
Conference & Editorial Board Members, except ex officio members

H Incorporated External Documents

The following documents are hereby formally incorporated into this Organization Rules by reference:

- MoU for Construction and Building of the CBM experiment (to be adopted)
- MoU to raise contributions to a Common Fund (to be adopted)
- MoU to raIse contributions to the Maintenance and Operation of the CBM experiment (to be adopted)

Person hoding management position in the CBM Collaboration (November 2018)



CBM-MB: Members of the CBM Management Board

Full Name	State	Affiliation	Roles	Group Join	
Subhasis Chattopadhyay	FULL	VECC	SP-dep, CB, PL, RB, PB, COB	2009-03-18	
Jürgen Eschke	FULL	FAIR	CB, RC	2009-03-18	
Volker Friese	FULL	GSI	SPL, CC	2004-10-13	
Norbert Herrmann	FULL	PI-UHd	CB, SP, PB	2006-10-04	
Andrej Kugler	FULL	NPI-CAS	CB, RB, CB-chair-dep	2015-04-27	
Vladimir Ladygin	FULL	JINR-VBLHEP	CB, SP-dep	2017-10-01	
Walter F.J. Müller	FULL	FAIR	TC	2004-10-13	
Hans Rudolf Schmidt	FULL	UTuebingen	CB, PL, COB-chair	2015-06-24	
Ilya Selyuzhenkov	FULL	GSI	PB, PC	2018-03-29	
Peter Senger	FULL	GSI	PL, MB	2004-10-13	
Joachim Stroth	FULL	IKF-UFra	CB, MB, PL, PB	2006-10-04	
Nu Xu	FULL	CCNU	RB, PB, CB-chair	2017-10-01	
Wojciech Zabołotny	FULL	TUWarsaw	MB	2018-08-31	

Annex 4a: Detailed compilation of the Construction Cost and Funding of the Detector/Subsystems, and of Responsibilities for the Construction Workpackages by the Institutes.

MVD

05.11.2018

							2005 prices						2018 prices				
Information																	
PSP code	System & description	Country	TDR year of approval	Funding agency	Institution	component belongs to CBM day 1 setup	Total Cost (2005 prices)	Secured amount (2005 price)		EoI (2005 price)	To be assigned (2005 price)	Total Cost (2018 prices)	Secured amount (2018 price)		EoI (2018 price)	To be assigned (2018 price)
								FAIR Budget	Other sources				FAIR Budget	Other sources		
1.1.1.1	**Micro Vertex Detector (MVD)**		**submission planned for 2018**			**1**	**914**					**1313**				
1.1.1.1.1	Micro Vertex Detector (MVD)	Germany		BMBF-VF	Institut für Kernphysik, Universität Frankfurt	**1**	529		366	163		759	0	525	234	0
	MVD - sensor specification and validation															
	MVD - sensor silicon design & production - IKF contribution															
	MVD - flex cables															
	MVD - modules (incl carrier + cold plate)															
	MVD - ROBs (concentrator boards)															
	MVD - half stations															
	MVD - base plates															
	MVD - master table (incl base plate positioning)															
	MVD - feed through plates															
	MVD - cable carrier (front plate to stationary cable tray)															
	MVD - cooling system (incl manifolds)															
	MVD - LV system, incl off-detector cables, panels															
	MVD - on-detector environment monitoring															
	MVD - CRI layer - firmware design															
	MVD - CRI layer - common HW procurement (incl opto transceivers)															
1.1.1.1.2	Micro Vertex Detector (MVD)	France		CNRS	IPHC, IN2P3-CNRS and Université de Strasbourg	**1**	314		314			451	0	451	0	0
	MVD - sensor silicon design & production - IPHC contribution															
1.1.1.1.3	Micro Vertex Detector (MVD)	Korea		Pusan National University	Pusan National University	**1**	71			71		103	0	0	103	0
	?															

							2005 prices						2018 prices					
		Information																
PSP code	System & description	TDR year of approval	Country	Funding agency	Institution	component belongs to CBM day 1 setup	Total Cost (2005 prices)	Secured amount (2005 price)		EoI (2005 price)	To be assigned (2005 price)	Total Cost (2018 prices)	Secured amount (2018 price)		EoI (2018 price)	To be assigned (2018 price)
								FAIR Budget	Other sources				FAIR Budget	Other sources		
1.1.1.2	**Silicon Tracking System (STS)**	**approved in 2013**				**1**	**9504**					**13647**				
1.1.1.2.1	Silicon Tracking System (STS)		Germany	BMBF / HMWK	GSI	**1**	4630	4630				6649	6649	0	0	0
	STS - sensors - GSI contribution															
	STS - Sensor-FEB-cables - GSI contribution															
	STS - ladder support structures (all stations)															
	STS - modules - KIT contract (40%)															
	STS - modules - GSI contribution (30%)															
	STS - ladders (station 5-8)															
	STS - ROB (readout boards), incl on-detector cables															
	STS - POB (power boards), incl on-detector cables															
	STS - cold plates, FEB/ROB/POB boxes															
	STS - station support stuctures (C-Frame)															
	STS - overall support structure and thermal enclosure															
	STS - beampipe (in box)															
	STS - rail system (mounting of STS box in magnet)															
	STS - cable carrier (STS box to stationary cable tray)															
	STS - LV system, incl off-detector cables, panels															
	STS - HV system, incl off-detector cables, panels															
	STS - on-detector environment monitoring															
1.1.1.2.2	Silicon Tracking System (STS)		Russia	ROSATOM	Joint Institute for Nuclear Research (JINR-VBLHEP)	**1**	2115	2115				3037	3037	0	0	0
	STS - sensors - JINR contribution															
	STS - Sensor-FEB-cables - JINR contribution															
	STS - modules - JINR Contribution (40%)															
	STS - ladders (station 1-4)															
1.1.1.2.3	Silicon Tracking System (STS)		Poland	Ministry of Science and Higher Education	AGH University of Science and Technology	**1**	572	572				822	822	0	0	0
	STS - readout ASIC (STS-XYTER)															
1.1.1.2.6.1	Silicon Tracking System (STS)		Poland	Ministry of Science and Higher Education	Marian Smoluchowski Institute of Physics, Jagiellonian University	**1**	707	707				1016	1016	0	0	0
	STS - sensors - JU contribution															
1.1.1.2.6.2	Silicon Tracking System (STS)		Poland	Ministry of Science and Higher Education	AGH University of Science and Technology	**1**	261	261				374	374	0	0	0
	STS - FEBs															
1.1.1.2.7	Silicon Tracking System (STS)		Poland	Ministry of Science and Higher Education	Institute of Electronic Systems, WUT	**1**	260	260				373	373	0	0	0
	STS - CRI layer - firmware design															
	STS - CRI layer - common HW procurement - WUT constribution															
1.1.1.2.4	Silicon Tracking System (STS)		Germany	BMBF-VF	Physikalisches Institut, Universität Tübingen	**1**	865		607	258		1242	0	872	370	0
	STS - gas system (dry nitrogen, sensor cooling) - design															
	STS - gas system (dry nitrogen, sensor cooling) - production															
	STS - CO2 cooling system - cooling plant															
	STS - CO2 cooling system - distribution system															
	STS - CO2 cooling lines E30 to E10															
1.1.1.2.5	Silicon Tracking System (STS)		Ukraine	NASU / State Agency of Ukraine	High Energy Physics Department, KINR	**1**	94			94		134	0	0	134	0
	?															
n/a	STS - CRI layer - common HW procurement - ? constribution					**1**	?				?	?				?

RICH

05.11.2018

							2005 prices						2018 prices					
Information																		
PSP code	System & description	TDR year of approval	Country	Funding agency	Institution	component belongs to CBM day 1 setup	Total Cost (2005 prices)	Secured amount (2005 price)		EoI (2005 price)	To be assigned (2005 price)		Total Cost (2018 prices)	Secured amount (2018 price)		EoI (2018 price)	To be assigned (2018 price)
								FAIR Budget	Other sources					FAIR Budget	Other sources		
1.1.1.3.1	**Ring Image Cherenkov Detector (RICH)**	**approved in 2014**				**1**	**3697**						**5309**				
1.1.1.3.1.4	Ring Image Cherenkov Detector (RICH)		Germany	BMBF-VF	II. Physikalisches Institut, Universität Giessen	**1**	405		275	130			582	0	395	187	0
	RICH - mirrors																
	RICH - mirror alignment system																
	RICH - LV supply system, incl off-detector cables, panels																
	RICH - HV system, incl off-detector cables, panels																
	RICH - extra service LV/HV lines for platform parking position																
	RICH - on-detector environment monitoring																
	RICH - CRI layer - firmware design																
	RICH - CRI layer - common HW procurement (incl opto transceivers)																
1.1.1.3.1.5	Ring Image Cherenkov Detector (RICH)		Germany	BMBF-VF	Fachbereich C, Universität Wuppertal	**1**	603		531	71			866	0	763	103	0
	RICH - MAPMTs (QA and camera design)																
	RICH - readout																
	RICH - shielding boxes for photon detector - manufacturing																
1.1.1.3.1.2.1	Ring Image Cherenkov Detector (RICH)		Russia	ROSATOM	NRC Kurchatov Institute (PNPI)	**1**	1200	1200					1723	1723	0	0	0
	RICH - mirror support structure and mirror mounts																
	RICH - radiator gas vessel and support frame																
	RICH - beam pipe																
	RICH - shielding boxes for photon detector - design																
	RICH - auxiliary structures and equipment																
	RICH - design service line routing (operation and park position)																
	RICH - gas system																
	RICH - extra service gas lines for platform parking position																
1.1.1.3.1.2.2	Ring Image Cherenkov Detector (RICH)		Russia	ROSATOM	NRC Kurchatov Institute (PNPI)	**1**	250			250			359	0	0	359	0
	?																
1.1.1.3.1.1	Ring Image Cherenkov Detector (RICH)		Germany	BMBF-GSI	GSI	**1**	1239		1239				1780	0	1780	0	0
	RICH - MAPMTs (procurement)																

MUCH

05.11.2018

							2005 prices						2018 prices					
Information																		
PSP code	System & description	TDR year of approval	Country	Funding agency	Institution	component belongs to CBM day 1 setup	Total Cost (2005 prices)	Secured amount (2005 price)		EoI (2005 price)	To be assigned (2005 price)	Total Cost (2018 prices)	Secured amount (2018 price)		EoI (2018 price)	To be assigned (2018 price)	Comments
								FAIR Budget	Other sources				FAIR Budget	Other sources			
1.1.1.3.2	**Muon Detector (MUCH)**	**approved in 2015**				**1**	**6138**					**8814**					
1.1.1.3.2.1	Muon Detector (MUCH)		India	DST	Variable Energy Cyclotron Centre (VECC)	**1**	36		36			51	0	51	0	0	
	MUCH - CRI layer- firmware design																
	MUCH - CRI layer - common HW procurement (incl opto transceivers)																
1.1.1.3.2.2	Muon Detector (MUCH)		India	DST / Bose	Variable Energy Cyclotron Centre (VECC) / Bose Institute	**1**	3790	3790				5442	5442	0	0	0	
	MUCH - st 1+2 GEM chambers																
	MUCH - st 1+2 GEM readout ASIC (STS-XYTER)																
	MUCH - st 1+2 GEM LDO																
	MUCH - st 1+2 GEM FEBs																
	MUCH - st 1+2 GEM ROBs																
	MUCH - st 1+2 GEM POBs																
	MUCH - st 3+4 chambers																
	MUCH - st 3+4 readout ASIC (tbd)																
	MUCH - st 3+4 FEBs																
	MUCH - st 3+4 ROBs																
	MUCH - st 3+4 POBs																
	MUCH - electronics cooling system																
	MUCH - st 1+2 chamber support (incl rails+aligment)																
	MUCH - st 1+2 cable carriers (chamber support to main frame)																
	MUCH - st 3+4 chamber support (incl rails+aligment)																
	MUCH - st 3+4 cable carriers (chamber support to main frame)																
	MUCH - LV system, incl off-detector cables, panels																
	MUCH - HV system, incl off-detector cables, panels																
	MUCH - on-detector environment monitoring																
1.1.1.3.2.3.1	Muon Detector (MUCH)		Russia	ROSATOM	NRC Kurchatov Institute (PNPI)	**1**	1822	1822				2616	2616	0	0	0	
	MUCH - Carbon absorber																
	MUCH - Iron absorber 1-3 (thin)																
	MUCH - beam pipe (incl pipe shielding)																
	MUCH - station support structures																
	MUCH - overall support (incl. rail system)																
	MUCH - cable carriers (main frame to stationary cable trays)																
	MUCH - st 1+2 GEM gas system																
	MUCH - st 3+4 gas system																
1.1.1.3.2.3.2	Muon Detector (MUCH)		Russia	ROSATOM	NRC Kurchatov Institute (PNPI)	**1**	0			0		0	0	0	0	0	
	MUCH - Iron absorber 4 (thick)																
1.1.1.3.2.4	Muon Detector (MUCH)		Russia	ROSATOM	to be determined	**1**	490			490		704	0	0	704	0	

TRD

05.11.2018

							2005 prices						2018 prices					
Information																		
PSP code	System & description	TDR year of approval	Country	Funding agency	Institution	component belongs to CBM day 1 setup	Total Cost (2005 prices)	Secured amount (2005 price)		EoI (2005 price)	To be assigned (2005 price)		Total Cost (2018 prices)	Secured amount (2018 price)		EoI (2018 price)	To be assigned (2018 price)
								FAIR Budget	Other sources					FAIR Budget	Other sources		
1.1.1.4	**Transition Radiation Detector (TRD)**	**submission planned 2017**				**1**	**2544**						**3654**				
1.1.1.4.1	Transition Radiation Detector (TRD)		Germany	BMBF-VF	Institut für Kernphysik, Universität Frankfurt	**1**	478		321	156			686	0	462	225	0
	TRD - chambers (Frankfurt)																
	TRD - SPADIC production - IKF-Fra contribution																
	TRD - FEBs																
	TRD - POBs (power boards)																
	TRD - ROBs - IKF-Fra contribution																
	TRD - LV system, incl off-detector cables, panels																
	TRD - on-detector environment monitoring																
	TRD - CRI layer - procurement - IKF-UFra contribution																
1.1.1.4.3	Transition Radiation Detector (TRD)		Germany	BMBF-VF	Institut für Informatik (IRI), Universität Frankfurt	**1**	166		71	94			238	0	103	135	0
	TRD - CRI layer - firmware design																
	TRD - CRI layer - procurement - IRI-UFra contribution																
1.1.1.4.4	Transition Radiation Detector (TRD)		Germany	BMBF-VF	Institut für Kernphysik, Universität Münster	**1**	488		321	167			701	0	461	240	0
	TRD - chambers (Muenster)																
	TRD - SPADIC production - UMuenster contribution																
	TRD - ROBs - UMuenster contribution																
	TRD - HV system, incl off-detector cables, panels																
	TRD - CRI layer - procurement - UMuenster contribution																
1.1.1.4.2.1	Transition Radiation Detector (TRD)		Romania	MEN	IFIN-HH	**1**	752	752					1080	1080	0	0	0
	TRD - chambers (Bucharest)																
1.1.1.4.2.2	Transition Radiation Detector (TRD)		Romania	MEN	IFIN-HH	**1**	482		482				693	0	693	0	0
	TRD - chambers (Bucharest)																
1.1.1.4.5	Transition Radiation Detector (TRD)		to be assigned		to be assigned	**1**	0				0		0	0	0	0	0
	TRD - chamber column supports																
	TRD - main support structure																
	TRD - gas system (incl distribution, initial Xe fill)																
	TRD - cooling system																
	TRD - extra service lines for platform parking position																
1.1.1.4..6	Transition Radiation Detector (TRD)		Hungary	Hungarian Academy of Sciences	Wigner Research Center	**1**	179		36	143			256	0	51	205	0
	TRD - chambers (Budapest) ?																

							2005 prices						2018 prices				
Information																	
PSP code	System & description	TDR year of approval	Country	Funding agency	Institution	component belongs to CBM day 1 setup	Total Cost (2005 prices)	Secured amount (2005 price)		EoI (2005 price)	To be assigned (2005 price)		Total Cost (2018 prices)	Secured amount (2018 price)		EoI (2018 price)	To be assigned (2018 price)
								FAIR Budget	Other sources					FAIR Budget	Other sources		
1.1.1.5	**Time of Flight System (TOF)**	**approved in 2015**				**1**	**5857**						**8411**				
1.1.1.5.1	Time of Flight System (TOF)		Germany	BMBF / HMWK	GSI	**1**	740	740					1063	1063	0	0	0
	TOF - readout ASIC GET4 - design+prototyping																
	TOF - FEE/TDC/readout board design+prototyping																
	TOF - M123 - FEE board (PADI+GET4) - prod. and QA - fund GSI																
	TOF - M123 - GBTx board PCB production and QA																
	TOF - M456 - FEE board (PADI) - production and QA - fund GSI																
	TOF - M456 - FT+GET4 boards - production and QA - fund GSI																
	TOF - M456 - BPL board PCB production and QA																
	TOF - BFCT - GBTx board PCB production and QA																
	TOF - clock distribution																
1.1.1.5.2	Time of Flight System (TOF)		China	Central China Normal University	Central China Normal University, College of Physical Science and Technology	**1**	2857		2857				4103	0	4103	0	0
	TOF - low resistivity glass (outer wall)																
	TOF - MRPC 3a counters (outer wall, low res glass)																
	TOF - MRPC 3b counters (outer wall, float glass)																
	TOF - MRPC 4 counters (outer wall, float glass)																
	TOF - readout ASICs GET4 - production																
	TOF - M123 - FEE board (PADI+GET4) - prod. and QA - fund CN																
	TOF - M456 - FEE board (PADI) - production and QA - fund CN																
	TOF - M456 - FT+GET4 boards - production and QA - fund CN																
	TOF - BFCT - FEE board (PADI+GET4) - prod. and QA - fund CN																
	TOF - LV/HV system - CCNU contribution																
1.1.1.5.5	Time of Flight System (TOF)		Germany	BMBF-VF	TU Darmstadt	**1**	104		72	32			150	0	104	46	0
	TOF - diamond start detector readout																
1.1.1.5.7	Time of Flight System (TOF)		Germany	BMBF-VF	Physikalisches Institut, Universität Heidelberg	**1**	740		441	299			1063	0	634	429	0
	TOF - MRPC 3+4 modules																
	TOF - readout ASIC PADI - design+prototyping																
	TOF - readout ASICs PADI - production																
	TOF - M123 - GBTx board - production and QA																
	TOF - M456 - BPL board - production and QA																
	TOF - BCFT - GBTx board - production and QA																
	TOF - cable carrier (main frame to stationary cable trays)																
	TOF - gas system																
	TOF - LV/HV system - PI-UHd contribution																
	TOF - on-detector environment monitoring																
	TOF - CRI layer - firmware design																
	TOF - CRI layer - common HW procurement (incl opto transceivers)																
1.1.1.5.3	Time of Flight System (TOF)		Romania	MEN	IFIN-HH	**1**	748	748					1074	1074	0	0	0
	TOF - low resistivity glass (inner wall)																
	TOF - MRPC 1+2 counters (inner wall, low res glass)																
	TOF - MRPC 1+2 modules (inner wall, low res glass)																
1.1.1.5.4	Time of Flight System (TOF)		Russia	ROSATOM	ITEP	**1**	468	468					672	672	0	0	0
	TOF - BFCT counters + modules																
	TOF - BFCT support																
1.1.1.5.8	Time of Flight System (TOF)		to be assigned		to be assigned	**1**	200				200		287	0	0	0	287
	TOF - main support structure (space frame)																
provided by HADES	TOF - diamond start detector sensor																

ECAL

05.11.2018

							2005 prices						2018 prices					
Information																		
PSP code	System & description	TDR year of approval	Country	Funding agency	Institution	component belongs to CBM day 1 setup	Total Cost (2005 prices)	Secured amount (2005 price)		EoI (2005 price)	To be assigned (2005 price)		Total Cost (2018 prices)	Secured amount (2018 price)		EoI (2018 price)	To be assigned (2018 price)
								FAIR Budget	Other sources					FAIR Budget	Other sources		
1.1.1.6.1	Electromagnetic Calorimeter (ECAL)	submission planned 2018	Russia	ROSATOM	ITEP	no	2805			2805			4029			4029	
	ECAL - detector + electronics																
	ECAL - calorimeter modules																
	ECAL - photon detectors (PMTs)																
	ECAL - readout																
	ECAL - mechanics																
	ECAL - support structure																
	ECAL - cable carrier (ECAL support to stationary cable trays)																
	ECAL - services																
	ECAL - LV system, incl off-detector cables, panels																
	ECAL - HV system, incl off-detector cables, panels																
	ECAL - extra service lines for wall parking position																
	ECAL - on-detector environment monitoring																
	ECAL - CRI layer - firmware design																
	ECAL - CRI layer - common HW procurement (incl opto transceivers)																

PSD

05.11.2018

							2005 prices						2018 prices				
Information																	
PSP code	System & description	TDR year of approval	Country	Funding agency	Institution	component belongs to CBM day 1 setup	Total Cost (2005 prices)	Secured amount (2005 price)		EoI (2005 price)	To be assigned (2005 price)	Total Cost (2018 prices)	Secured amount (2018 price)		EoI (2018 price)	To be assigned (2018 price)
								FAIR Budget	Other sources				FAIR Budget	Other sources		
1.1.1.6.2	**Projectile Spectator Detector (PSD)**	**approved in 2015**				**1**	**944**					**1356**				
1.1.1.6.2.1	Projectile Spectator Detector (PSD)		Russia	ROSATOM	INR	**1**	778	778				1117	1117	0	0	0
	PSD - calorimeter modules															
	PSD - photo detectors (SiPMs)															
	PSD - SiPM FEB (incl temperature control)															
	PSD - readout - overall integration and procurements															
	PSD - LV system, incl off-detector cables, panels															
	PSD - SiPM powering system, incl off-detector cables, panels															
	PSD - CRI layer - firmware design															
	PSD - CRI layer - common HW procurement (incl opto transceivers)															
1.1.1.6.2.2	Projectile Spectator Detector (PSD)		Czech Republic	MSMT	Czech Technical University (CTU)	**1**	83		83			119	0	119	0	0
	PSD - support structure															
	PSD - cable carriers (PSD to stand and stand to stationary trays)															
1.1.1.6.2.3	Projectile Spectator Detector (PSD)		Czech Republic	MSMT	NPI	**1**	83		83			119	0	119	0	0
	PSD - Muon calibration system modules															
	PSD - on-detector environment monitoring															
?	PSD - readout - ToT readout develpment and testing		Germany		IKP-TUD											

Dipol Magnet

05.11.2018

							2005 prices					2018 prices				
Information																
PSP code	System & description	TDR year of approval	Country	Funding agency	Institution	component belongs to CBM day 1 setup	Total Cost (2005 prices)	Secured amount (2005 price)		EoI (2005 price)	To be assigned (2005 price)	Total Cost (2018 prices)	Secured amount (2018 price)		EoI (2018 price)	To be assigned (2018 price)
								FAIR Budget	Other sources				FAIR Budget	Other sources		
1.1.1.7	**Dipol MAGNET**	approved in 2014	Russia	ROSATOM	BINP, Novosibirsk	**1**	3758	3758				**5396**	5396			
	Magnet - yoke															
	Magnet - alignment feet															
	Magnet - coils (incl cryostats)															
	Magnet - quench protection system															
	Magnet - power suppy (incl magnet to converter cables)															
	Magnet - cryo feed box															
	Magnet - cryo branch box															
	Magnet - cryo line branch box to feed box															
?	**Magnet - cryo controls integration**				GSI											
?	**Magnet - power and overall controls integration**				GSI											

Online Systems

05.11.2018

							2005 prices						2018 prices					
Information																		
PSP code	System & description	TDR year of approval	Country	Funding agency	Institution	component belongs to CBM day 1 setup	Total Cost (2005 prices)	Secured amount (2005 price)		EoI (2005 price)	To be assigned (2005 price)		Total Cost (2018 prices)	Secured amount (2018 price)		EoI (2018 price)	To be assigned (2018 price)
								FAIR Budget	Other sources					FAIR Budget	Other sources		
1.1.1.8	**Online Systems (DAQ and FLES)**	**submission planned 2018**				**1**	**2259**						**3243**				
1.1.1.8.1	**Data Acquisition and Controls (DAQ)**		Germany	BMBF-GSI	GSI	**1**	881		881				1266	0	1266	0	0
	DAQ - GBTx+VL common procurement																
	FLES - CRB - hardware selection and common procurement !! cost with detectors !!				GSI												
1.1.1.8.3	Data Acquisition and Controls (DAQ)		Germany	BMBF-VF	Institut für Informatik (IRI), Universität Frankfurt	**1**	71		71				102	0	102	0	0
	DAQ - radtol DCS board (design + prototype)																
	DAQ - radtol DCS board (production)																
1.1.1.8.4	Data Acquisition and Controls (DAQ)		Germany	BMBF-VF	Universität Karlsruhe	**1**	40		40				57	0	57	0	0
	DAQ - TFC (Timing and Fast Control)																
1.1.1.8.2	Data Acquisition and Controls (DAQ)		Poland	Ministry of Science and Higher Education	Institute of Electronic Systems, WUT	**1**	200	200					287	287	0	0	0
	FLES - CRB (Common Readout Board) - Firmware framework																
1.1.1.8.5	**First Level Event Selector (FLES)**		to be assigned		to be assigned	**1**	0				0		0	0	0	0	0
1.1.1.8.6.1	**First Level Event Selector (FLES)**		Germany	BMBF-VF	Institute for Advanced Studies (FIAS)	**1**	704		704				1010	0	1010	0	0
1.1.1.8.6.2	First Level Event Selector (FLES)		Germany	BMBF-VF	Institute for Advanced Studies (FIAS)	**no**	363			363			521	0	0	521	0
	FLES - CRB (Common Readout Board) - backend firmware																
	FLES - entry nodes (in CBM E40)																
	FLES - infrastructure nodes (in CBM E40)																
	FLES - entry nodes network																
?	DAQ - master clock (BUTIS ?)				?												
?	DAQ - throttle controls (firmware)				?												
?	DAQ - controls servers				?												
?	DAQ - gateways to accelerator controls (WR ect)				?												

Infrastructure

05.11.2018

							2005 prices					2018 prices				
Information																
PSP code	System & description	TDR year of approval	Country	Funding agency	Institution	component belongs to CBM day 1 setup	Total Cost (2005 prices)	Secured amount (2005 price)		EoI (2005 price)	To be assigned (2005 price)	Total Cost (2018 prices)	Secured amount (2018 price)		EoI (2018 price)	To be assigned (2018 price)
								FAIR Budget	Other sources				FAIR Budget	Other sources		
1.1.1.10	**Infrastructure**	**no TDR foreseen**	all countries involved in CBM	proposed to be covered by CBM **Common Fund**	all CBM member institutes	**1**	**2273**					**3264**				
1.1.1.10.1	**Target area Beam pipe & vacuum**		CBM	Common Fund	all CBM member institutes	**1**	**235**			235		**337**			337	
	Infra - beam pipe HADES-CBM (incl valves)															
	Infra - beam pipe STS-MUCH adapter															
	Infra - beam pipe RICH/MUCH replacement															
	Infra - beam pipe RICH/MUCH to PSD (incl valves)															
	Infra - beam pipe inside PSD (incl valves)															
	Infra - beam pipe PSD to beam dump (incl valves)															
	Infra - beam pipe vacuum pumps (incl connection pipes)															
	Infra - start counter chamber															
	Infra - target chamber (incl MVD support)															
	Infra - target mounting system															
	Infra - beam abort detection system															
	Infra - halo detector (UDEW)															
	Infra - beam diagnosis box															
1.1.1.10.2	**Rail system**		CBM	Common Fund	all CBM member institutes	**1**	**425**			425		**611**			611	
	Infra - main rail system (TOF,ECAL,PSD)															
1.1.1.10.3	**Common data optical fibers**		CBM	Common Fund	all CBM member institutes	**1**	**147**			147		**211**			211	
	Infra - optical fibers E40 to E10 (incl panels)															
1.1.1.10.4	**Electronics Racks**		CBM	Common Fund	all CBM member institutes	**1**	**257**			257		**368**			368	
	Infra - service area (racks, cooling)															
	Infra - electronics room (racks, cooling)															
1.1.1.10.5	**Cryogenics**		CBM	Common Fund	all CBM member institutes	**1**	**191**			191		**274**			274	
	Infra - cryo lines DB2 to BB															
	Infra - support balcony for cryo branch box + feed box															
1.1.1.10.6	**Detector gas infrastructure**		CBM	Common Fund	all CBM member institutes	**1**	**242**			242		**347**			347	
	Infra - gas lines E30 to E10 (incl panels)															
	Infra - gas lines E40 to E30 (incl local distribution and panels)															
	Infra - gas Storage area (incl heatable container)															
	Infra - gas monitor E10/E30/E40															
	Infra - gas exhaust systems E30/E40															
1.1.1.10.7	**General infrastructure & safety**		CBM	Common Fund	all CBM member institutes	**1**	**433**			433		**621**			621	
	Infra - cable trays (stationary systems only)															
	Infra - CBM beam dump - installation iron !! planned by CBM; execution by civil; cost assignment still open !!															
	Infra - CBM beam dump - CH2 entrance structure															
	Infra - upstream beam dump (between HADES and CBM) !! to HADES ?? !!															
	Infra - survey tools & alignment															
	Infra - mounting area															
	Infra - meeting room															
	Infra - control room															
	Infra - 'Hebezeuge' E10/E40															
	Infra - scaffolds, fences ect safety equipment															
1.1.1.10.8	**Common support structures**		CBM	Common Fund	all CBM member institutes	**1**	**198**			198		**284**			284	
	Infra - upstream platform and magnet foundation !! on ill-assigned item list; on risk register !!															
	Infra - downstream support structure (for RICH/MUCH/TRD)															
1.1.1.10.9	**Power & standard media distribution**		CBM	Common Fund	all CBM member institutes	**1**	**147**			147		**211**			211	
	Infra - infrastructure for magnet power (main cables, cooling,...)															
	Infra - power distribution E10/E30/E40															
	Infra - cooling water distribution E10/E30/E40															

Annex 4b: Summary Tables on Construction Cost and Funding with the Values of Commitments by Funding Agency to the CBM Detectors/Subsystems.

CBM Country Funding

8th CBM RRB

05.11.2018

by Resource Coordinator, J. Eschke

CBM day 1 setup detector / system	Costs	Common fund	Germany			Russia	India	Poland	Romania	China	Czech Republic	Hungary	France	Korea	Ukraine	to be assigned
			GSI and FAIR project funds	University funding (VF)	Universities											
MVD	1,31			0,53	0,23								0,45	0,10		
STS	13,65		6,65	0,87	0,37	3,04		2,59							0,13	
TRD	3,65			1,02	0,60				1,77			0,21 + 0,05				
RICH	5,31		**1,78**	1,16	0,29	0,36 + 1,72										
TOF	8,41		1,06	0,74	0,47	0,67			1,07	4,10						0,29
Online Systems (DAQ+FLES) day-1 setup	2,72		**1,27**	1,17				0,29								
Magnet	5,40					5,40										
MuCh	8,81					0,70 + 2,62	5,49									
PSD	1,36					1,12					0,24					
Infrastructure	3,26	**3,26**														
ECAL (not part of day 1 setup)																
Sum in 2018 M€	**53,89**	**3,26**	**10,76**	**5,49**	**1,97**	**1,06 + 14,56**	**5,49**	**2,87**	**2,85**	**4,10**	**0,24**	**0,21 + 0,05**	**0,45**	**0,10**	**0,13**	**0,29**
Sum in 2005 M€	37,53	2,27	7,49	3,82	1,37	0,74 + 10,14	3,83	2,00	1,98	2,86	0,17	0,14 + 0,04	0,31	0,07	0,09	0,20
escalation factor (1./1.436)																

This calculation uses an escalation factor of 1.436 between 2005 prices and 2018 prices

1,436

amounts in green are considered as secured / **87,0 %** secured / with Common Fund **93,0%**

amounts in blue - Expression of Interest (EoI)

amounts in red - to be assigned

CBM phase 1 setup																
CBM day 1 setup	53,89	3,26	10,76	5,49	1,97	1,06 + 14,56	5,49	2,87	2,85	4,10	0,24	0,21 + 0,05	0,45	0,10	0,13	0,29
full bandwidth (DAQ/FLES)	0,52				0,52											
plus ECAL	4,03					4,03										
Sum in 2018 M€	**58,44**	**3,26**	**10,76**	**5,49**	**2,49**	**5,09 14,56**	**5,49**	**2,87**	**2,85**	**4,10**	**0,24**	**0,21 0,05**	**0,45**	**0,10**	**0,13**	**0,29**
Sum in 2005 M€	40,69	2,27	7,49	3,82	1,73	3,55 + 10,14	3,83	2,00	1,98	2,86	0,17	0,14 + 0,04	0,31	0,07	0,09	0,20

80,2 % secured / with Common Fund **85,8%**

update experiment funding

by Resource Coordinator, J. Eschke

8th CBM RRB

05.11.2018

Status CBM experiment funding (CBM start version@SIS100)

PSP Code	detector / system	Prices, K Euro (2005 price)				Prices, K Euro (2018 price)				components belongs to CBM day 1 setup
		total cost 2005 prices	Secured amount	EoI	To be assigned	total cost 2018 prices	Secured amount	EoI	To be assigned	
1.1.1.1	Micro Vertex Detector (MVD)	**914**	680	234		**1313**	976	336		1
1.1.1.2	Silicon Tracking System (STS)	**9504**	9152	351		**13647**	13143	505		1
1.1.1.3.1	Ring Image Cherenkov Detector (RICH)	**3697**	3246	451		**5309**	4661	648		1
1.1.1.3.2	Muon Detector (MUCH)	**6138**	5648	490		**8814**	8110	704		1
1.1.1.4	Transition Radiation Detector (TRD)	**2544**	1984	561		**3654**	2849	805		1
1.1.1.5	Time of Flight System (TOF)	**5857**	5327	331	200	**8411**	7649	475	287	1
1.1.1.6.1	Electromagnetic Calorimeter (ECAL)	**2805**		2805		**4029**		4029		no
1.1.1.6.2	Projectile Spectator Detector (PSD)	**944**	944			**1356**	1356			1
1.1.1.7	Dipol MAGNET	**3758**	3758			**5396**	5396			1
1.1.1.8	Online Systems (DAQ and FLES)	**2259**	1896	363		**3243**	2722	521		1
1.1.1.10	Infrastructure	**2273**		2273		**3264**		3264		1
	Sum CBM Phase 1 setup	**40693**	**32634**	**7860**	**200**	**58436**	**46862**	**11286**	**287**	**80,2%**
Sum CBM day 1 setup (without ECAL and full bandwidth DAQ/FLES)		**37525**	**32634**	**4691**	**200**	**53886**	**46862**	**6737**	**287**	**87,0%**
										percentage secured
1,436	**This calculation uses an escalation factor of 1.436 between 2005 prices and 2018 prices**									

Cost Matrix

8th CBM RRB

05.11.2018

by Resource Coordinator, J.Eschke

All numbers refer to MSV

DEFINITIONS:

FAIR Budget = Amounts of money approved or expected from the FAIR Budget of 78 M Euro

Other sources = Amounts of money considered secured outside the FAIR Budget

EoI = Existing expression of interest by an institution

To be assigned = Amounts of money to be yet assigned to potentially interested funding agencies

Comments = All amounts mentioned herein are indicated in 2005 prices

Information							2005 prices					2018 prices					
PSP code	System & description	TDR year of approval	Country	Funding agency	Institution	component belongs to CBM day 1 setup	Total Cost (2005 prices)	Secured amount (2005 price)		EoI (2005 price)	To be assigned (2005 price)	Total Cost (2018 prices)	Secured amount (2018 price)		EoI (2018 price)	To be assigned (2018 price)	Comments
								FAIR Budget	Other sources				FAIR Budget	Other sources			
1.1.1. CBM start version@SIS100																	
1.1.1.1	**Micro Vertex Detector (MVD)**	**submission planned 2019**				**1**	**914**					**1313**					
1.1.1.1.1	Micro Vertex Detector (MVD)		Germany	BMBF-VF	Institut für Kernphysik, Universität Frankfurt	**1**	529		366	163		759	0	525	234	0	
1.1.1.1.2	Micro Vertex Detector (MVD)		France	CNRS	IPHC, IN2P3-CNRS and Université de Strasbourg	**1**	314		314			451	0	451	0	0	
1.1.1.1.3	Micro Vertex Detector (MVD)		Korea	Pusan National University	Pusan National University	**1**	71			71		103	0	0	103	0	
1.1.1.2	**Silicon Tracking System (STS)**	**approved in 2013**				**1**	**9504**					**13647**					
1.1.1.2.1	Silicon Tracking System (STS)		Germany	BMBF / HMWK	GSI	**1**	4630	4630				6649	6649	0	0	0	
1.1.1.2.2	Silicon Tracking System (STS)		Russia	ROSATOM	Joint Institute for Nuclear Research (JINR-VBLHEP)	**1**	2115	2115				3037	3037	0	0	0	
1.1.1.2.3	Silicon Tracking System (STS)		Poland	Science and Higher Education	AGH University of Science and Technology	**1**	572	572				822	822	0	0	0	
1.1.1.2.6.1	Silicon Tracking System (STS)		Poland	Science and Higher Education	Marian Smoluchowski Institute of Physics, Jagiellonian University	**1**	707	707				1016	1016	0	0	0	
1.1.1.2.6.2	Silicon Tracking System (STS)		Poland	Science and Higher Education	AGH University of Science and Technology	**1**	261	261				374	374	0	0	0	
1.1.1.2.7	Silicon Tracking System (STS)		Poland	Science and Higher Education	Institute of Electronic Systems, WUT	**1**	260	260				373	373	0	0	0	
1.1.1.2.4	Silicon Tracking System (STS)		Germany	BMBF-VF	Physikalisches Institut, Universität Tübingen	**1**	865		607	258		1242	0	872	370	0	
1.1.1.2.5	Silicon Tracking System (STS)		Ukraine	Agency of Ukraine	High Energy Physics Department, KINR	**1**	94			94		134	0	0	134	0	
1.1.1.3	**Lepton ID Detector**																
1.1.1.3.1	**Ring Image Cherenkov Detector (RICH)**	**approved in 2014**				**1**	**3697**					**5309**					
1.1.1.3.1.4	Ring Image Cherenkov Detector (RICH)		Germany	BMBF-VF	II. Physikalisches Institut, Universität Giessen	**1**	405		275	130		582	0	395	187	0	
1.1.1.3.1.5	Ring Image Cherenkov Detector (RICH)		Germany	BMBF-VF	Fachbereich C, Universität Wuppertal	**1**	603		531	71		866	0	763	103	0	
1.1.1.3.1.2.1	Ring Image Cherenkov Detector (RICH)		Russia	ROSATOM	NRC Kurchatov Institute (PNPI)	**1**	1200	1200				1723	1723	0	0	0	
1.1.1.3.1.2.2	Ring Image Cherenkov Detector (RICH)		Russia	ROSATOM	NRC Kurchatov Institute (PNPI)	**1**	250			250		359	0	0	359	0	
1.1.1.3.1.3	Ring Image Cherenkov Detector (RICH)		to be assigned		to be assigned	**1**	0				0	0	0	0	0	0	
1.1.1.3.1.1	Ring Image Cherenkov Detector (RICH)		Germany	BMBF-GSI	GSI	**1**	1239		1239			1780	0	1780	0	0	
1.1.1.3.2	**Muon Detector (MUCH)**	**approved in 2015**				**1**	**6138**					**8814**					
1.1.1.3.2.1	Muon Detector (MUCH)		India	DST	Variable Energy Cyclotron Centre (VECC)	**1**	36		36			51	0	51	0	0	
1.1.1.3.2.2	Muon Detector (MUCH)		India	DST	Variable Energy Cyclotron Centre (VECC)	**1**	3790	3790				5442	5442	0	0	0	
1.1.1.3.2.3.1	Muon Detector (MUCH)		Russia	ROSATOM	NRC Kurchatov Institute (PNPI)	**1**	1822	1822				2616	2616	0	0	0	
1.1.1.3.2.3.2	Muon Detector (MUCH)		Russia	ROSATOM	NRC Kurchatov Institute (PNPI)	**1**	0			0		0	0	0	0	0	
1.1.1.3.2.4	Muon Detector (MUCH)		Russia	ROSATOM	to be determined	**1**	490			490		704	0	0	704	0	
1.1.1.4	**Transition Radiation Detector (TRD)**	**approved in 2018**				**1**	**2544**					**3654**					
1.1.1.4.1	Transition Radiation Detector (TRD)		Germany	BMBF-VF	Institut für Kernphysik, Universität Frankfurt	**1**	478		321	156		686	0	462	225	0	
1.1.1.4.3	Transition Radiation Detector (TRD)		Germany	BMBF-VF	Institut für Informatik (IRI), Universität Frankfurt	**1**	166		71	94		238	0	103	135	0	
1.1.1.4.4	Transition Radiation Detector (TRD)		Germany	BMBF-VF	Institut für Kernphysik, Universität Münster	**1**	488		321	167		701	0	461	240	0	
1.1.1.4.2.1	Transition Radiation Detector (TRD)		Romania	MEN	IFIN-HH	**1**	752	752				1080	1080	0	0	0	
1.1.1.4.2.2	Transition Radiation Detector (TRD)		Romania	MEN	IFIN-HH	**1**	482		482			693	0	693	0	0	
1.1.1.4.5	Transition Radiation Detector (TRD)		to be assigned		to be assigned	**1**	0				0	0	0	0	0	0	
1.1.1.4..6	Transition Radiation Detector (TRD)		Hungary	Hungarian Academy of Sciences	Wigner Research Center	**1**	179		36	143		256	0	51	205	0	
1.1.1.5	**Time of Flight System (TOF)**	**approved in 2015**				**1**	**5857**					**8411**					
1.1.1.5.1	Time of Flight System (TOF)		Germany	BMBF / HMWK	GSI	**1**	740	740				1063	1063	0	0	0	
1.1.1.5.2	Time of Flight System (TOF)		China	Central China Normal University	Central China Normal University, College of Physical Science and Technology	**1**	2857		2857			4103	0	4103	0	0	
1.1.1.5.5	Time of Flight System (TOF)		Germany	BMBF-VF	TU Darmstadt	**1**	104		72	32		150	0	104	46	0	
1.1.1.5.6	Time of Flight System (TOF)		Germany	BMBF-VF	Institut für Informatik (IRI), Universität Frankfurt	**1**	0		0	0		0	0	0	0	0	
1.1.1.5.7	Time of Flight System (TOF)		Germany	BMBF-VF	Physikalisches Institut, Universität Heidelberg	**1**	740		441	299		1063	0	634	429	0	
1.1.1.5.3	Time of Flight System (TOF)		Romania	MEN	IFIN-HH	**1**	748	748				1074	1074	0	0	0	
1.1.1.5.4	Time of Flight System (TOF)		Russia	ROSATOM	ITEP	**1**	468	468				672	672	0	0	0	
1.1.1.5.8	Time of Flight System (TOF)		to be assigned		to be assigned	**1**	200				200	287	0	0	0	287	
1.1.1.6	**Calorimeter System**																
1.1.1.6.1	**Electromagnetic Calorimeter (ECAL)**	**submission t.b.d.**	Russia	ROSATOM	ITEP	**no**	**2805**			2805		**4029**			4029		
1.1.1.6.2	**Projectile Spectator Detector (PSD)**	**approved in 2015**				**1**	**944**					**1356**					
1.1.1.6.2.1	Projectile Spectator Detector (PSD)		Russia	ROSATOM	INR	**1**	778	778				1117	1117	0	0	0	
1.1.1.6.2.2	Projectile Spectator Detector (PSD)		Czech Republic	MSMT	Czech Technical University (CTU)	**1**	83		83			119	0	119	0	0	
1.1.1.6.2.3	Projectile Spectator Detector (PSD)		Czech Republic	MSMT	NPI	**1**	83		83			119	0	119	0	0	
1.1.1.7	**Dipol MAGNET**	**approved in 2014**	Russia	ROSATOM	Joint Institute for Nuclear Research (JINR-VBLHEP)	**1**	3758	3758				**5396**	5396				
1.1.1.8	**Online Systems (DAQ and FLES)**	**submission planned 2019 (DAQ) and 2020 (FLES)**				**1**	**2259**					**3243**					
1.1.1.8.1	**Data Acquisition and Controls (DAQ)**		Germany	BMBF-GSI	GSI	**1**	881		881			1266	0	1266	0	0	
1.1.1.8.3	Data Acquisition and Controls (DAQ)		Germany	BMBF-VF	Institut für Informatik (IRI), Universität Frankfurt	**1**	71		71			102	0	102	0	0	
1.1.1.8.4	Data Acquisition and Controls (DAQ)		Germany	BMBF-VF	Universität Karlsruhe	**1**	40		40			57	0	57	0	0	
1.1.1.8.2	Data Acquisition and Controls (DAQ)		Poland	Science and Higher Education	Institute of Electronic Systems, WUT	**1**	200	200				287	287	0	0	0	
1.1.1.8.5	**First Level Event Selector (FLES)**		to be assigned		to be assigned	**1**	0				0	0	0	0	0	0	
1.1.1.8.6.1	First Level Event Selector (FLES)		Germany	BMBF-VF	University Frankfurt/Frankfurt Institute for Advanced Studies (FIAS)	**1**	704		704			1010	0	1010	0	0	
1.1.1.8.6.2	First Level Event Selector (FLES)		Germany	BMBF-VF	University Frankfurt/Frankfurt Institute for Advanced Studies (FIAS)	**no**	363			363		521	0	0	521	0	
1.1.1.10	**Infrastructure**	**no TDR foreseen**	all countries involved in CBM	proposed to be covered by CBM **Common Fund**	all CBM member institutes	**1**	**2273**					**3264**					
1.1.1.10.1	**Target area Beam pipe & vacuum**		CBM	Common Fund	all CBM member institutes	**1**	**235**			235		**337**			337		
1.1.1.10.2	**Rail system**		CBM	Common Fund	all CBM member institutes	**1**	**425**			425		**611**			611		
1.1.1.10.3	**Common data optical fibers**		CBM	Common Fund	all CBM member institutes	**1**	**147**			147		**211**			211		
1.1.1.10.4	**Electronics Racks**		CBM	Common Fund	all CBM member institutes	**1**	**257**			257		**368**			368		
1.1.1.10.5	**Cryogenics**		CBM	Common Fund	all CBM member institutes	**1**	**191**			191		**274**			274		
1.1.1.10.6	**Detector gas infrastructure**		CBM	Common Fund	all CBM member institutes	**1**	**242**			242		**347**			347		
1.1.1.10.7	**General infrastructure & safety**		CBM	Common Fund	all CBM member institutes	**1**	**433**			433		**621**			621		
1.1.1.10.8	**Common support structures**		CBM	Common Fund	all CBM member institutes	**1**	**198**			198		**284**			284		
1.1.1.10.9	**Power & standard media distribution**		CBM	Common Fund	all CBM member institutes	**1**	**147**			147		**211**			211		
					Total amounts CBM Phase 1 setup		**40693**	**22801**	**9833**	**7860**	**200**	**58436**	**32743**	**14120**	**11286**	**287**	80,2%
		Total amounts CBM day 1 setup (without ECAL and full bandwidth DAQ/FLES)					**37525**	**22801**	**9833**	**4691**	**200**	**53886**	**32743**	**14120**	**6737**	**287**	**87,0%**
																	secured
This calculation uses an escalation factor of 1.436 between 2005 prices and 2018 prices					**1,436**												

Annex 5: Status CBM Technical Design Reports

Nr.	CBM subsystem	Status
1	Superconducting dipole magnet	approved
2	Silicon Tracking System (STS)	approved
3	Ring Imaging Cherenkov Detector (RICH),	approved
4	Projectile Spectator Detector (PSD):	approved
5	Muon Chamber System (MUCH),	approved
6	Time of Flight (TOF) system	approved
7	Transition Radiation Detector (TRD)	approved
8	Micro-Vertex Detector (MVD)	submission 2019
9a	Online Systems: Data Acquisition (DAQ)	submission 2019
9b	Online Systems: First Level Event Selection (FLES)	submission 2020
10	Electromagnetic Calorimeter (ECAL)	submission t.b.d.

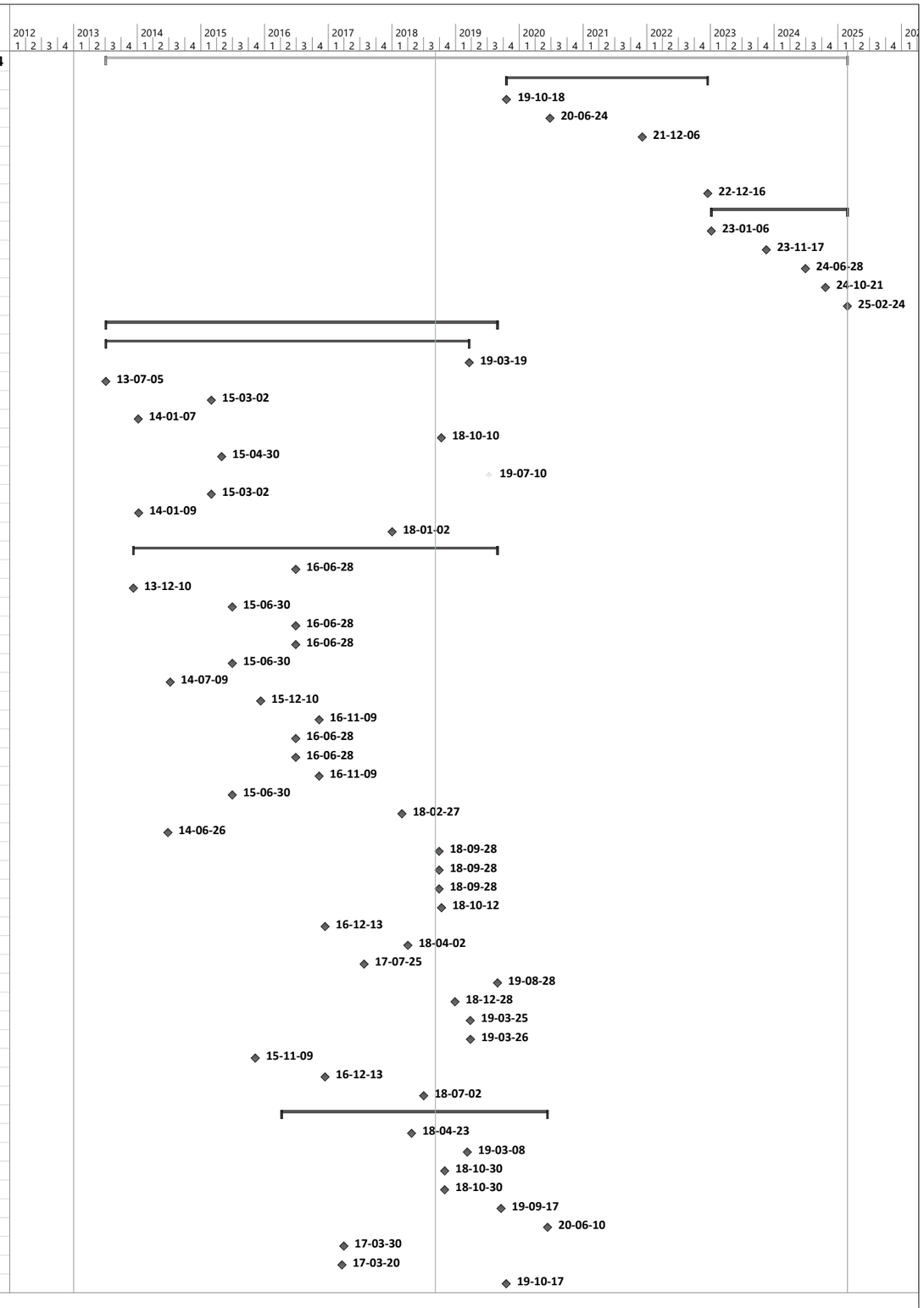
Annex 6: List of substantial manpower contributions of Institutes to Subsystem Construction, to Computing Subprojects, to the Physics Working Groups and to Preparation and Coordination tasks

Substantial Manpower contributions of the institutes to CBM

Mnemo	City	Country	Status	Join	Full Name of Institute	CMoU Status	CAVE	MAGNET	MVD	STS	MUCH	RICH	TRD	TOF	ECAL	PSD	DAQ	FLES-IN	CPSIM	CPECS	CPODM	CPDPF	CPALG	CPOAE	CPINF	PWHAD	PWDIL	PWC2F	PWCHA	MCBM	COORD
AGH	Kraków	Poland	FULL	26.09.2007	AGH University of Science and Technology	1				x																					
AMU	Aligarh	India	FULL	26.09.2007	Department of Physics, Aligarh Muslim University	0																									
Bose	Kolkata	India	FULL	29.03.2012	Department of Physics, Bose Institute	1					x																				
CCNU	Wuhan	China	FULL	11.03.2005	College of Physical Science and Technology, Central China Normal University	1								x																	
CTGU	Yichang	China	FULL	23.04.2015	College of Science, China Three Gorges University	0																									
CTU	Prague	Czech Republic	FULL	13.02.2004	Czech Technical University	1										x															
ECTP	Cairo	Egypt	ASSO	14.04.2016	Egyptian Center for Theoretical Physics, Faculty of Engineering, Modern University for Technology and Information	1																				x					
ELTE	Budapest	Hungary	FULL	13.02.2004	Eötvös Loránd University	0																									
FAIR	Darmstadt	Germany	FULL	29.03.2012	Facility for Antiproton and Ion Research in Europe GmbH	1				x																					x
FIAS	Frankfurt	Germany	FULL	07.10.2009	Frankfurt Institute for Advanced Studies, Goethe-Universität Frankfurt	1												x			x									x	
GSI	Darmstadt	Germany	FULL	13.02.2004	GSI Helmholtzzentrum für Schwerionenforschung GmbH	1	x	x						x			x		x	x		x	x			x	x	x		x	x
HZDR	Dresden	Germany	FULL	13.02.2004	Institut für Strahlenphysik, Helmholtz-Zentrum Dresden-Rossendorf	1								x																	
IFIN-HH	Bucharest	Romania	FULL	13.02.2004	Horia Hulubei National Institute of Physics and Nuclear Engineering	1							x	x																	
IHEP	Protvino	Russia	FULL	13.02.2004	Institute for High Energy Physics	0																									
IIT-B	Mumbai	India	ASSO	14.04.2016	Indian Institute of Technology Bombay	0																									
IIT-I	Indore	India	FULL	10.04.2014	Indian Institute of Technology Indore	1					x																				
IIT-KGP	Kharagpur	India	FULL	21.09.2006	Indian Institute of Technology Kharagpur	0																									
IKF-UFra	Frankfurt	Germany	FULL	13.02.2004	Institut für Kernphysik, Goethe-Universität Frankfurt	1			x				x													x	x				
IKP-TUD	Darmstadt	Germany	FULL	27.09.2012	Institut für Kernphysik, Technische Universität Darmstadt	1																					x				
INR	Moscow	Russia	FULL	13.02.2004	Institute for Nuclear Research	1										x															
Ioffe	St. Petersburg	Russia	ASSO	07.04.2011	Ioffe Institute, Russian Academy of Sciences	0																									
IOPB	Bhubaneswar	India	FULL	21.09.2006	Institute of Physics	1					x																				
IPHC	Strasbourg	France	FULL	13.02.2004	Institut Pluridisciplinaire Hubert Curien (IPHC), IN2P3-CNRS and Université de Strasbourg	1			x																						
IRI-UFra	Frankfurt	Germany	FULL	07.10.2009	Institute for Computer Science, Goethe-Universität Frankfurt	1											x			x											
ITEP	Moscow	Russia	FULL	13.02.2004	Institute for Theoretical and Experimental Physics	1								x	x				x												
JINR-LIT	Dubna	Russia	FULL	13.02.2004	Laboratory of Information Technologies, Joint Institute for Nuclear Research	1		x												x	x										
JINR-VBLHEP	Dubna	Russia	FULL	13.02.2004	Veksler and Baldin Laboratory of High Energy Physics, Joint Institute for Nuclear Research	1		x		x	x																				
KINR	Kyiv	Ukraine	FULL	15.10.2008	High Energy Physics Department, Kiev Institute for Nuclear Research	1				x																					
KIT	Karlsruhe	Germany	FULL	11.09.2014	Karlsruhe Institute of Technology	0																									
KRI	St. Petersburg	Russia	ASSO	13.02.2004	V.G. Khlopin Radium Institute	0																									
MEPhI	Moscow	Russia	FULL	11.03.2005	National Research Nuclear University MEPhI	1					x																				
NBU	Siliguri	India	ASSO	14.04.2016	Department of Physics, Faculty of Science, University of North Bengal	0																									
NPI-CAS	Řež	Czech Republic	FULL	13.02.2004	Nuclear Physics Institute of the Czech Academy of Sciences	1										x															
NRC-KI	Moscow	Russia	FULL	13.02.2004	National Research Centre "Kurchatov Institute"	1									x																
PI-UHd	Heidelberg	Germany	FULL	13.02.2004	Physikalisches Institut, Universität Heidelberg	1								x																	x
PNPI	Gatchina	Russia	FULL	13.02.2004	Petersburg Nuclear Physics Institute named by B.P.Konstantinov of National Research Centre "Kurchatov Institute"	1					x	x																				
PNU	Pusan	Korea	FULL	13.02.2004	Pusan National University	1			x																						
SINP-MSU	Moscow	Russia	FULL	13.02.2004	Skobeltsyn Institute of Nuclear Phyiscs, Lomonosov Moscow State University	1				x																					
SPbPU	St. Petersburg	Russia	ASSO	13.02.2004	St. Petersburg Polytechnic University	0																									
Tsinghua	Beijing	China	FULL	15.10.2008	Department of Engineering Physics, Tsinghua University	1								x																	
TUWarsaw	Warsaw	Poland	FULL	11.04.2013	Institute of Electronic Systems, Warsaw University of Technology	1				x							x														
UBanaras	Varanasi	India	FULL	21.09.2006	Department of Physics, Banaras Hindu University	1					x								x												
UBucharest	Bucharest	Romania	FULL	27.02.2008	Atomic and Nuclear Physics Department, University of Bucharest	1													x								x	x			
UCalcutta	Kolkata	India	FULL	26.09.2007	Department of Physics and Department of Electronic Science, University of Calcutta	1					x																				
UChongqing	Chongqing	China	FULL	27.09.2017	Chongqing University	0																									
UGauhati	Guwahati	India	FULL	15.10.2008	Nuclear and Radiation Physics Research Laboratory, Department of Physics, Gauhati University	1													x							x					
UGiessen	Gießen	Germany	FULL	29.11.2010	Justus-Liebig-Universität Gießen	1						x															x			x	
UJagiellonian	Kraków	Poland	FULL	13.02.2004	Marian Smoluchowski Institute of Physics, Jagiellonian University	1				x																					
UJammu	Jammu	India	FULL	26.09.2007	Department of Physics, University of Jammu	0																									
UKashmir	Srinagar	India	FULL	26.09.2007	Department of Physics, University of Kashmir	0																									
UKyiv	Kyiv	Ukraine	FULL	13.02.2004	Department of Nuclear Physics, Taras Shevchenko National University of Kyiv	0																									
UMuenster	Münster	Germany	FULL	13.02.2004	Institut für Kernphysik, Westfälische Wilhelms-Universität Münster	1							x																		
UPanjab	Chandigarh	India	FULL	21.09.2006	Department of Physics, Panjab University	1					x																				
USilesia	Katowice	Poland	ASSO	13.02.2004	Institute of Physics, University of Silesia	0																									
USplit	Split	Croatia	ASSO	01.03.2007	University of Split	0																									
USTC	Hefei	China	FULL	17.12.2005	Department of Modern Physics, University of Science & Technology of China	1								x																	
UTuebingen	Tübingen	Germany	FULL	07.04.2011	Physikalisches Institut, Eberhard Karls Universität Tübingen	1				x																					
UWarsaw	Warsaw	Poland	FULL	13.02.2004	Faculty of Physics, University of Warsaw	1																				x					
UWuppertal	Wuppertal	Germany	FULL	07.10.2009	Fakultät für Mathematik und Naturwissenschaften, Bergische Universität Wuppertal	1						x																			
VECC	Kolkata	India	FULL	03.03.2006	Variable Energy Cyclotron Centre	1					x								x								x			x	
WignerRCP	Budapest	Hungary	FULL	13.02.2004	Institute for Particle and Nuclear Physics, Wigner Research Centre for Physics, Hungarian Academy of Sciences	1																				x					
ZIB	Berlin	Germany	FULL	23.04.2015	Konrad-Zuse-Zentrum für Informationstechnik Berlin	1															x										
ZITI-UHd	Mannheim	Germany	FULL	13.02.2004	Institut für Technische Informatik, Universität Heidelberg	0																									

Annex 7: Construction Schedule

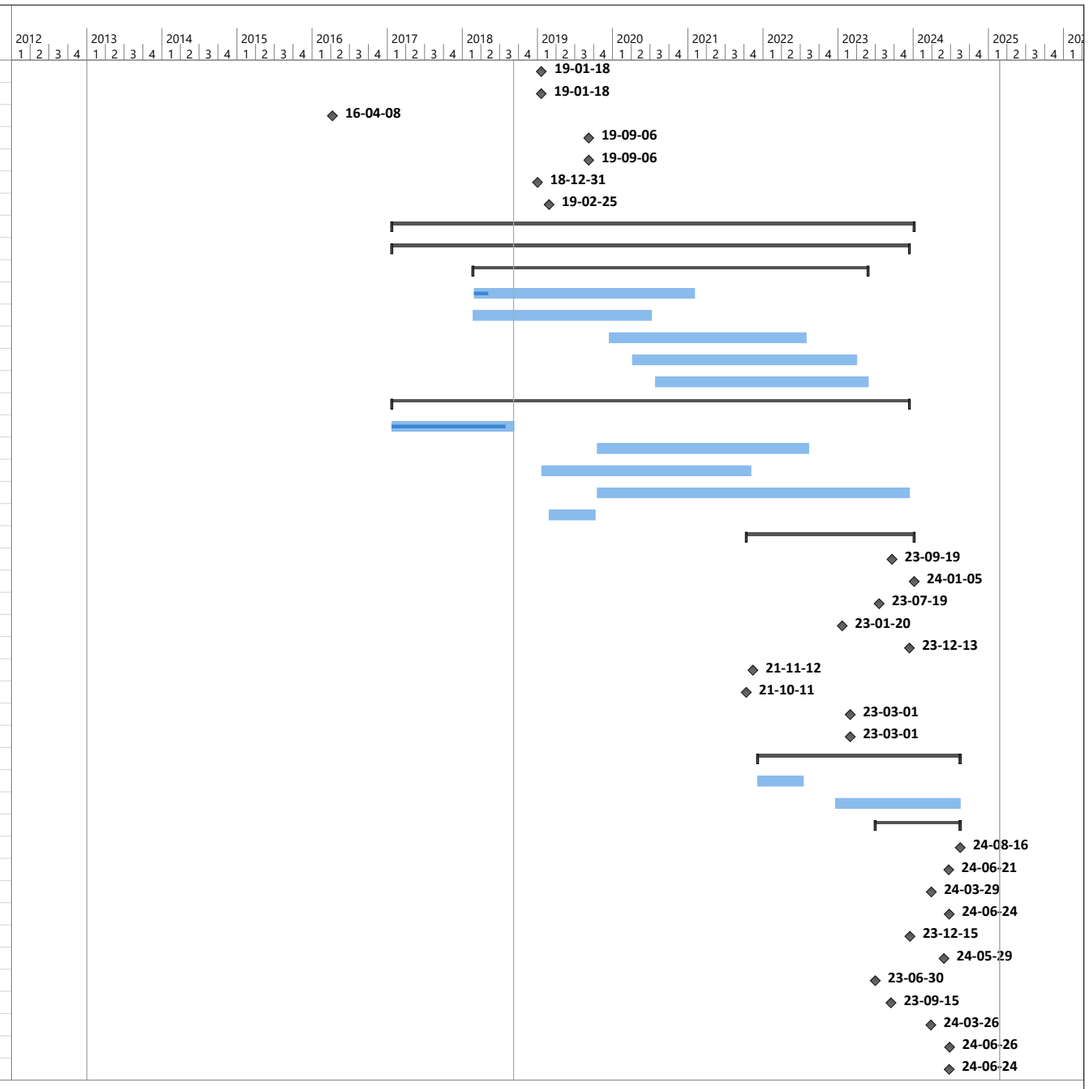
ID	Task Mode	PLL	PSPCode	ActivityCode	Task Name	Duration	Start	Finish
0					**Level2_CBM**	**151.82 mc**	**Fri 13-07-05**	**Mon 25-02-24**
1					**Overview from FSB**	**41.25 mon**	**Fri 19-10-18**	**Fri 22-12-16**
2			3.1.13	SCC3.MCC130-S	Start with Building Shell	0 mons	Fri 19-10-18	Fri 19-10-18
3			3.1.12	SCC3.MCC130-MB09	Building shell completed	0 mons	Wed 20-06-24	Wed 20-06-24
4			3.1.13	SCC3.MB10	G014 Building ready for installation	0 mons	Mon 21-12-06	Mon 21-12-06
5			3.1.13	SCC3.ACC10	G014 Time frame for installation	3.85 mons	Mon 21-12-06	Tue 22-03-22
6			3.1.0	SCC5.ACC170	Acceptance by HBO	2.75 mons	Mon 22-10-03	Fri 22-12-16
7			3.1.0	SCC5.MCC170-MB10-LV	Acceptance by HBO	0 mons	Fri 22-12-16	Fri 22-12-16
8					**Overview from Cryo and SIS100**	**27.81 mon**	**Fri 23-01-06**	**Mon 25-02-24**
9			2.14.8.1.2	S006.M10	Start of commissioning with local cryogenics and magnets	0 mons	Fri 23-01-06	Fri 23-01-06
10			2.14.8	S007.M11	Cryogenics SIS100 ready for operation	0 mons	Fri 23-11-17	Fri 23-11-17
11			2.8	S007.M11	SIS 100 ready for beam	0 mons	Fri 24-06-28	Fri 24-06-28
12			2.8		SIS100 First 'Splash Event'	0 mons	Mon 24-10-21	Mon 24-10-21
13			2.8		SIS100 ready for 'pilot beam' operation (single user, low-intensity)	0 mons	Mon 25-02-24	Mon 25-02-24
14					**Phase 2: design and planning**	**80.2 mons**	**Fri 13-07-05**	**Wed 19-08-28**
15					**Approval of TDRs**	**74.4 mons**	**Fri 13-07-05**	**Tue 19-03-19**
16			1.1.1.1	S002.M3	Approval MVD TDR [M3]	0 mons	Tue 19-03-19	Tue 19-03-19
17			1.1.1.2	S002.M3	Approval STS TDR [M3]	0 mons	Fri 13-07-05	Fri 13-07-05
18			1.1.1.3.2	S002.M3	Approval MUCH TDR [M3]	0 mons	Mon 15-03-02	Mon 15-03-02
19			1.1.1.3.1	S002.M3	Approval RICH TDR [M3]	0 mons	Tue 14-01-07	Tue 14-01-07
20			1.1.1.4	S002.M3	Approval TRD TDR [M3]	0 mons	Wed 18-10-10	Wed 18-10-10
21			1.1.1.5	S002.M3	Approval TOF TDR [M3]	0 mons	Thu 15-04-30	Thu 15-04-30
22			~~1.1.1.6.1~~	~~S002.M3~~	~~Approval ECAL TDR [M3]~~	~~0 mons~~	~~Wed 19-07-10~~	~~Wed 19-07-10~~
23			1.1.1.6.2	S002.M3	Approval PSD TDR [M3]	0 mons	Mon 15-03-02	Mon 15-03-02
24			1.1.1.7	S002.M3	Approval Magnet TDR [M3]	0 mons	Thu 14-01-09	Thu 14-01-09
25			1.1.1.8	S002.M3	Approval DAQ/FLES TDR [M3]	0 dys	Tue 18-01-02	Tue 18-01-02
26					**Inkind and Collaboration Contracts**	**74.6 mons**	**Tue 13-12-10**	**Wed 19-08-28**
27			1.1.1.2.1	S002.ME1	Council decision on STS GSI assignment [ME1]	0 mons	Tue 16-06-28	Tue 16-06-28
28			1.1.1.2.2	S002.ME1	Council decision on STS JINR assignment [ME1]	0 mons	Tue 13-12-10	Tue 13-12-10
29			1.1.1.2.3	S002.ME1	Council decision on STS AGH-ASIC assignment [ME1]	0 mons	Tue 15-06-30	Tue 15-06-30
30			1.1.1.2.6.1	S002.ME1	Council decision on STS JU assignment [ME1]	0 mons	Tue 16-06-28	Tue 16-06-28
31			1.1.1.2.6.2	S002.ME1	Council decision on STS AGH-FEB assignment [ME1]	0 mons	Tue 16-06-28	Tue 16-06-28
32			1.1.1.2.7	S002.ME1	Council decision on STS WUT assignment [ME1]	0 mons	Tue 15-06-30	Tue 15-06-30
33			1.1.1.3.1.2.1	S002.ME1	Council decision on RICH PNPI-1 assignment [ME1]	0 mons	Wed 14-07-09	Wed 14-07-09
34			1.1.1.3.2.2	S002.ME1	Council decision on MUCH VECC assignment [ME1]	0 mons	Thu 15-12-10	Thu 15-12-10
35			1.1.1.3.2.3.1	S002.ME1	Revised Council decision on MUCH PNPI-1 [ME1]	0 mons	Wed 16-11-09	Wed 16-11-09
36			1.1.1.5.1	S002.ME1	Council decision on TOF GSI assignment [ME1]	0 mons	Tue 16-06-28	Tue 16-06-28
37			1.1.1.5.3	S002.ME1	Council decision on TOF IFIN assignment [ME1]	0 mons	Tue 16-06-28	Tue 16-06-28
38			1.1.1.5.4	S002.ME1	Council decision on TOF ITEP assignment [ME1]	0 mons	Wed 16-11-09	Wed 16-11-09
39			1.1.1.6.2.1	S002.ME1	Council decision on PSD INR assignment [ME1]	0 mons	Tue 15-06-30	Tue 15-06-30
40			1.1.1.2.1	S002.M4	Contract STS GSI signed [M4]	0 mons	Tue 18-02-27	Tue 18-02-27
41			1.1.1.2.2	S002.M4	Contract STS JINR signed [M4]	0 mons	Thu 14-06-26	Thu 14-06-26
42			1.1.1.2.3	S002.M4	Contract STS AGH-ASIC signed [M4]	0 mons	Fri 18-09-28	Fri 18-09-28
43			1.1.1.2.6.1	S002.M4	Contract STS JU signed [M4]	0 mons	Fri 18-09-28	Fri 18-09-28
44			1.1.1.2.6.2	S002.M4	Contract STS AGH-FEB signed [M4]	0 mons	Fri 18-09-28	Fri 18-09-28
45			1.1.1.2.7	S002.M4	Contract STS WUT signed [M4]	0 mons	Fri 18-10-12	Fri 18-10-12
46			1.1.1.3.1.2.1	S002.M4	Contract RICH PNPI-1 signed [M4]	0 mons	Tue 16-12-13	Tue 16-12-13
47			1.1.1.3.2.2	S002.M4	Contract MUCH VECC signed [M4]	0 mons	Mon 18-04-02	Mon 18-04-02
48			1.1.1.3.2.3.1	S002.M4	Contract MUCH PNPI-1 signed [M4]	0 mons	Tue 17-07-25	Tue 17-07-25
49			1.1.1.4.2.1	S002.M4	Contract TRD IFIN signed [M4]	0 mons	Wed 19-08-28	Wed 19-08-28
50			1.1.1.5.1	S002.M4	Contract TOF GSI signed [M4]	0 mons	Fri 18-12-28	Fri 18-12-28
51			1.1.1.5.3	S002.M4	Contract TOF IFIN signed [M4]	0 mons	Mon 19-03-25	Mon 19-03-25
52			1.1.1.5.4	S002.M4	Contract TOF ITEP signed [M4]	0 mons	Tue 19-03-26	Tue 19-03-26
53			1.1.1.6.2.1	S002.M4	Contract PSD-INR signed [M4]	0 mons	Mon 15-11-09	Mon 15-11-09
54			1.1.1.7	S002.M4	Contract Magnet BINP signed [M4]	0 mons	Tue 16-12-13	Tue 16-12-13
55			1.1.1.8.2	S002.M4	Contract DAQ WUT signed [M4]	0 dys	Mon 18-07-02	Mon 18-07-02
56					**Phase 4: pre-series + prototyping**	**54.4 mons**	**Fri 16-04-08**	**Wed 20-06-10**
57			1.1.1.2	S002.M7	STS - sensors PRR [M7]	0 mons	Mon 18-04-23	Mon 18-04-23
58			1.1.1.2	S002.M6	STS - STS-XYTER ASIC PDR [M6]	0 mons	Fri 19-03-08	Fri 19-03-08
59			1.1.1.2	S002.M6	STS - core PDR [M6]	0 mons	Tue 18-10-30	Tue 18-10-30
60			1.1.1.2	S002.M7	STS - ROB/POB PRR [M7]	0 mons	Tue 18-10-30	Tue 18-10-30
61			1.1.1.3.1	S002.M7	RICH - mirror PRR [M7]	0 mons	Tue 19-09-17	Tue 19-09-17
62			1.1.1.3.1.2.1	S002.M7	RICH - mechanics FDR [M7]	0 mons	Wed 20-06-10	Wed 20-06-10
63			1.1.1.5.2	S002.M7	TOF - glass PRR for preproduction [M7]	0 mons	Thu 17-03-30	Thu 17-03-30
64			1.1.1.5.2	S002.M7	TOF - STAR Counter PRR [M7]	0 mons	Mon 17-03-20	Mon 17-03-20
65			1.1.1.5	S002.M7	TOF - MRPC 3 PRR [M7]	0 mons	Thu 19-10-17	Thu 19-10-17



Project: Level2_CBM
Date: Fri 18-09-07

Task	Summary	Inactive Milestone	Duration-only	Start-only	External Milestone	Manual Progress	
Split	Project Summary	Inactive Summary	Manual Summary Rollup	Finish-only	Deadline		
Milestone	Inactive Task	Manual Task	Manual Summary	External Tasks	Progress		

ID	Task Mode	PLLi	PSPCode	ActivityCode	Task Name	Duration	Start	Finish
66			1.1.1.5	S002.M7	TOF - ASIC PRR [M7]	0 mons	Fri 19-01-18	Fri 19-01-18
67			1.1.1.5	S002.M7	TOF - electronics PRR [M7]	0 mons	Fri 19-01-18	Fri 19-01-18
68			1.1.1.6.2	S002.M7	PSD - module PRR [M7]	0 mons	Fri 16-04-08	Fri 16-04-08
69			1.1.1.6.2	S002.M7	PSD - readout&control PRR [M7]	0 mons	Fri 19-09-06	Fri 19-09-06
70			1.1.1.6.2	S002.M7	PSD - SiPM PPR [M7]	0 mons	Fri 19-09-06	Fri 19-09-06
71			1.1.1.6.2	S002.M7	PSD - support FDR accepted [M7]	0 mons	Mon 18-12-31	Mon 18-12-31
72			1.1.1.7	S002.M7	Magnet FDR accepted [M7]	0 mons	Mon 19-02-25	Mon 19-02-25
73					**Phase 5+6: manufacturing + shipment**	**90.75 mon**	**Mon 17-01-23**	**Fri 24-01-05**
74					**Major production activities**	**89.9 mons**	**Mon 17-01-23**	**Wed 23-12-13**
75			**1.1.1.2**		**STS**	**68.65 mon**	**Wed 18-02-21**	**Fri 23-05-26**
76					Silicon microstrip sensors	38.25 mon	Tue 18-02-27	Mon 21-02-01
77					Read-out electronics	30.95 mon	Wed 18-02-21	Mon 20-07-06
78					Modules	34.25 mon	Mon 19-12-16	Fri 22-07-29
79					Ladders	39 mons	Mon 20-04-06	Fri 23-03-31
80					Half-Units (completely instrumented C-Frames)	37 mons	Mon 20-07-27	Fri 23-05-26
81					**TOF**	**89.9 mons**	**Mon 17-01-23**	**Wed 23-12-13**
82					Counter production (STAR)	21.25 mon	Mon 17-01-23	Fri 18-09-07
83					Counter production	36.7 mons	Fri 19-10-18	Wed 22-08-10
84					Electronics production	36.35 mon	Mon 19-01-21	Tue 21-11-02
85					Module production	54.2 mons	Fri 19-10-18	Wed 23-12-13
86			1.1.1.7	S005.A91	Magnet - produce magnet [A91]	8 mons	Tue 19-02-26	Mon 19-10-07
87					**Systems ready for installation**	**29.2 mons**	**Mon 21-10-11**	**Fri 24-01-05**
88			1.1.1.1	S006.M10	MVD - ready for installation [M10]	0 mons	Tue 23-09-19	Tue 23-09-19
89			1.1.1.2	S006.M10	STS - detector ready for installation [M10]	0 mons	Fri 24-01-05	Fri 24-01-05
90			1.1.1.3.1	S006.M10	RICH - ready for installation [M10]	0 mons	Wed 23-07-19	Wed 23-07-19
91			1.1.1.4	S006.M10	TRD - all parts rdy for install [M10]	0 mons	Fri 23-01-20	Fri 23-01-20
92			1.1.1.5	S006.M10	TOF - all parts rdy for install [M10]	0 mons	Wed 23-12-13	Wed 23-12-13
93			1.1.1.6.2	S006.M10	PSD - all parts rdy for install [M10]	0 mons	Fri 21-11-12	Fri 21-11-12
94			1.1.1.7	S006.M10	Magnet - ready for installation [M10]	0 mons	Mon 21-10-11	Mon 21-10-11
95			1.1.2		HADES magnet ready for installation [M10]	0 mons	Wed 23-03-01	Wed 23-03-01
96			1.1.2		HADES detectors ready for installation [M10]	0 mons	Wed 23-03-01	Wed 23-03-01
97					**Phase 7: installation + commissioning**	**35.25 mon**	**Mon 21-12-06**	**Fri 24-08-16**
98					Phase 1b - basic installations (in inst-wind)	8 mons	Mon 21-12-06	Fri 22-07-15
99					Phase 2b - installation and comm-wob after HBO	21.75 mon	Mon 22-12-19	Fri 24-08-16
100					**Systems ready for beam**	**14.75 mon**	**Fri 23-06-30**	**Fri 24-08-16**
101			1.1.1.1	S007.M11	MVD - ready for beam [M11]	0 mons	Fri 24-08-16	Fri 24-08-16
102			1.1.1.2	S007.M11	STS - ready for beam [M11]	0 mons	Fri 24-06-21	Fri 24-06-21
103			1.1.1.3.1	S007.M11	RICH - ready for beam [M11]	0 mons	Fri 24-03-29	Fri 24-03-29
104			1.1.1.3.2	S007.M11	MUCH - ready for beam [M11]	0 mons	Mon 24-06-24	Mon 24-06-24
105			1.1.1.4	S007.M11	TRD - ready for beam [M11]	0 mons	Fri 23-12-15	Fri 23-12-15
106			1.1.1.5	S007.M11	TOF - ready for beam [M11]	0 mons	Wed 24-05-29	Wed 24-05-29
107			1.1.1.6.2	S007.M11	PSD - ready for beam [M11]	0 mons	Fri 23-06-30	Fri 23-06-30
108			1.1.1.7	S007.M11	Magnet - ready for operation [M11]	0 mons	Fri 23-09-15	Fri 23-09-15
109			1.1.2	S007.M11	HADES ready for beam [M11]	0 mons	Tue 24-03-26	Tue 24-03-26
110			1.1.1	S007.M11	CBM h+e (STS+RICH+TOF+PSD) ready for beam [M11]	0 mons	Wed 24-06-26	Wed 24-06-26
111			1.1.1	S007.M11	CBM mu (STS+MUCH+TOF+PSD) ready for beam [M11]	0 mons	Mon 24-06-24	Mon 24-06-24



Project: Level2_CBM
Date: Fri 18-09-07

Task	Summary	Inactive Milestone	Duration-only	Start-only	External Milestone	Manual Progress
Split	Project Summary	Inactive Summary	Manual Summary Rollup	Finish-only	Deadline	
Milestone	Inactive Task	Manual Task	Manual Summary	External Tasks	Progress	

Annex 8: Procedures for the Common Construction Fund for the Cave Infrastructure

Procedure for the CBM Common Fund

According to current planning it is planned to cover the investment costs of the CBM cave infrastructure (PSP code 1.1.1.10) of about 3,3 M€ by the Common Fund.

The cave infrastructure items (see detailed list below) are of common interest of all participating institutes in the CBM collaboration. They need to be purchased and installed in the CBM cave in order to provide a proper technical environment in the CBM cave for the mounting of all detector systems (in-kind contributions of the CBM member institutes).

The CBM collaboration has decided to implement a Common Fund. **Each full member institute shall contribute according to the number of PhD holders working for CBM.** The annual due amounts per institute (see table below) have been defined such that the required expenditures for the cave infrastructure (see list below) are covered.

The implementation of the CBM Common Fund depends on the support of the national funding agencies from the corresponding country. Therefore the CBM Collaboration Board (CB) has adopted at the collaboration meeting in September 2017 in Wuhan, China, the following resolution:

„The CB sees the urgent need to collect the following amounts per member institute per PhD holder in the following years for covering the investment costs of the cave infrastructure:

- *2018 – 500 Euro*
- *2019 – 2000 Euro*
- *2020 – 3500 Euro*
- *2021 – 4500 Euro*
- *2022 – 500 Euro*

The capability of the CBM member institutes to contribute with these annual payments depends on the support of the corresponding national funding agencies.

The CBM CB therefore urges the FAIR management to ask the funding agencies at the next RRB meeting to implement common funds for the FAIR experiments."

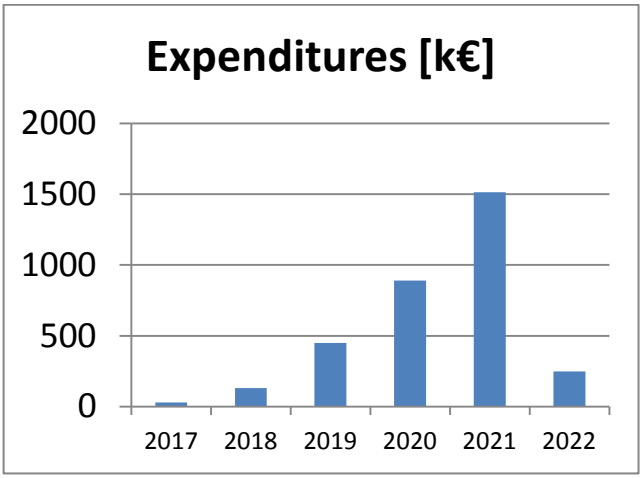
Breakdown of the suggested annual contributions to the CBM Common Fund for the member institutes of the CBM collaboration (CBM data base 25th September 2018):

Institute	Country	all CBM members	PhD-Students	PhDs + Profs	common fund 2018 [€]	common fund 2019 [€]	common fund 2020 [€]	common fund 2021 [€]	common fund 2022 [€]	Total [€]	Total per country [€]	Fraction per country [%]
					500	2000	3500	4500	2300			
					EURO per PhD/Prof	EURO per PhD/Prof	EURO per PhD/Prof	EURO per PhD/Prof	EURO per PhD/Prof			
Tsinghua (THU)	China	8	3	5	2.500	10.000	17.500	22.500	11.500	64.000		
USTC	China	8	4	2	1.000	4.000	7.000	9.000	4.600	25.600		
CCNU	China	12	4	8	4.000	16.000	28.000	36.000	18.400	102.400		
Uchongqing	China	2	0	1	500	2.000	3.500	4.500	2.300	12.800		
CTGU	China	4	1	3	1.500	6.000	10.500	13.500	6.900	38.400	243.200	7,45
CTU	Czech Republic	2	0	1	500	2.000	3.500	4.500	2.300	12.800		
NPI-CAS	Czech Republic	5	1	4	2.000	8.000	14.000	18.000	9.200	51.200	64.000	1,96
IPHC	France	12	1	6	3.000	12.000	21.000	27.000	13.800	76.800	76.800	2,35
ZIB	Germany	4	0	3	1.500	6.000	10.500	13.500	6.900	38.400		
FAIR	Germany	2	0	2	1.000	4.000	7.000	9.000	4.600	25.600		
GSI	Germany	52	3	39	19.500	78.000	136.500	175.500	89.700	499.200		
IKP-TUD	Germany	3	2	1	500	2.000	3.500	4.500	2.300	12.800		
HZDR	Germany	5	1	3	1.500	6.000	10.500	13.500	6.900	38.400		
FIAS	Germany	10	5	5	2.500	10.000	17.500	22.500	11.500	64.000		
IKF-UFra	Germany	22	10	9	4.500	18.000	31.500	40.500	20.700	115.200		
IRI-UFra	Germany	9	6	3	1.500	6.000	10.500	13.500	6.900	38.400		
UGiessen	Germany	11	5	4	2.000	8.000	14.000	18.000	9.200	51.200		
PI-UHd	Germany	5	2	2	1.000	4.000	7.000	9.000	4.600	25.600		
KIT	Germany	8	0	4	2.000	8.000	14.000	18.000	9.200	51.200		
ZITI-UHd	Germany	1	0	1	500	2.000	3.500	4.500	2.300	12.800		
UMuenster	Germany	13	3	4	2.000	8.000	14.000	18.000	9.200	51.200		
UTuebingen	Germany	9	6	3	1.500	6.000	10.500	13.500	6.900	38.400		
UWuppertal	Germany	9	4	3	1.500	6.000	10.500	13.500	6.900	38.400	1.100.800	33,73
ELTE	Hungary	2	0	1	500	2.000	3.500	4.500	2.300	12.800		
WignerRCP	Hungary	4	0	2	1.000	4.000	7.000	9.000	4.600	25.600	38.400	1,18
AMU	India	6	1	5	2.500	10.000	17.500	22.500	11.500	64.000		
IOPB	India	2	0	1	500	2.000	3.500	4.500	2.300	12.800		
UPanjab	India	4	0	4	2.000	8.000	14.000	18.000	9.200	51.200		
UGauhati	India	2	1	1	500	2.000	3.500	4.500	2.300	12.800		
IIT-I	India	3	1	2	1.000	4.000	7.000	9.000	4.600	25.600		
UJammu	India	4	0	3	1.500	6.000	10.500	13.500	6.900	38.400		
IIT-KGP	India	4	2	2	1.000	4.000	7.000	9.000	4.600	25.600		
Bose	India	9	1	7	3.500	14.000	24.500	31.500	16.100	89.600		
UCalcutta	India	4	1	3	1.500	6.000	10.500	13.500	6.900	38.400		
VECC	India	11	4	5	2.500	10.000	17.500	22.500	11.500	64.000		
UKashmir	India	5	0	2	1.000	4.000	7.000	9.000	4.600	25.600		
UBanaras	India	2	0	2	1.000	4.000	7.000	9.000	4.600	25.600	473.600	14,51
PNU	Korea	1	0	1	500	2.000	3.500	4.500	2.300	12.800	12.800	0,39
AGH	Poland	14	2	12	6.000	24.000	42.000	54.000	27.600	153.600		
UJagiellonian	Poland	6	0	5	2.500	10.000	17.500	22.500	11.500	64.000		
TUWarsaw	Poland	8	3	5	2.500	10.000	17.500	22.500	11.500	64.000		
UWarsaw	Poland	3	0	3	1.500	6.000	10.500	13.500	6.900	38.400	320.000	9,80
IFIN-HH	Romania	5	0	4	2.000	8.000	14.000	18.000	9.200	51.200		
UBucharest	Romania	9	1	8	4.000	16.000	28.000	36.000	18.400	102.400	153.600	4,71
JINR-LIT	Russia	8	2	6	3.000	12.000	21.000	27.000	13.800	76.800		
JINR-VBLHEP	Russia	20	1	9	4.500	18.000	31.500	40.500	20.700	115.200		
PNPI	Russia	15	0	10	5.000	20.000	35.000	45.000	23.000	128.000		
INR	Russia	12	1	5	2.500	10.000	17.500	22.500	11.500	64.000		
ITEP	Russia	15	2	9	4.500	18.000	31.500	40.500	20.700	115.200		
MEPhI	Russia	11	2	8	4.000	16.000	28.000	36.000	18.400	102.400		
NRC-KI	Russia	5	0	3	1.500	6.000	10.500	13.500	6.900	38.400		
SINP-MSU	Russia	5	1	3	1.500	6.000	10.500	13.500	6.900	38.400		
IHEP	Russia	7	0	1	500	2.000	3.500	4.500	2.300	12.800	691.200	21,18
KINR	Ukraine	8	2	2	1.000	4.000	7.000	9.000	4.600	25.600		
UKyiv	Ukraine	6	1	5	2500	10000	17500	22500	11.500	64.000	89.600	2,75
Total:		**436**	**90**	**255**	**127.500**	**510.000**	**892.500**	**1.147.500**	**586.500**	**3.264.000**	**3.264.000**	**100,00**

Cost estimate and expenditures [2018 prices] for the CBM cave infrastructure (PSP code 1.1.1.10):

1.1.1.10	**Infrastructure**	**no TDR foreseen**	all countries involved in CBM	covered by CBM **Common**	all CBM member institutes	**3264**
1.1.1.10.1	**Target area Beam pipe & vacuum**		CBM	Common Fund	all CBM member institutes	**337**
1.1.1.10.2	**Rail system**		CBM	Common Fund	all CBM member institutes	**611**
1.1.1.10.3	**Common data optical fibers**		CBM	Common Fund	all CBM member institutes	**211**
1.1.1.10.4	**Electronics Racks**		CBM	Common Fund	all CBM member institutes	**368**
1.1.1.10.5	**Cryogenics**		CBM	Common Fund	all CBM member institutes	**274**
1.1.1.10.6	**Detector gas infrastructure**		CBM	Common Fund	all CBM member institutes	**347**
1.1.1.10.7	**General infrastructure & safety**		CBM	Common Fund	all CBM member institutes	**621**
1.1.1.10.8	**Common support structures**		CBM	Common Fund	all CBM member institutes	**284**
1.1.1.10.9	**distribution**		CBM	Common Fund	all CBM member institutes	**211**

Year	Expenditures [k€]
2017	**30**
2018	**130**
2019	**450**
2020	**890**
2021	**1515**
2022	**249**
Total [k€]	**3264**



Annex 9: General conditions applicable to experiments at FAIR

FAIR

Facility for **A**ntiproton and **I**on **R**esearch in Europe

GENERAL CONDITIONS

applicable to

EXPERIMENTS

Performed at
the Facility for Antiproton and Ion Research in Europe
FAIR

TABLE OF CONTENTS

GENERAL CONDITIONS

applicable to

EXPERIMENTS at FAIR

(Terms with a particular meaning in the context of this document are defined at the end – their first occurrence in the document is indicated with a reference number thus: term[n]).

The mission of the Facility for Antiproton and Ion Research in Europe (FAIR) is further strengthen Europe's and the Contracting Party countries' position in research in the world, and to intensify scientific cooperation across disciplinary and national boundaries. In Particular, FAIR constructs the accelerator facility, will operate it at completion and will provide the conditions for the realisation of the FAIR experiments.

This document (the "*General Conditions*") sets out the rules and procedures in organisational, managerial and financial matters, which apply to the participation by universities and research institutions (the "*Collaborating Institution(s)*") in experiments at FAIR. The Collaborating Institutions jointly constitute the "*Collaboration*". They provide, and are responsible for, the Visiting Research Teams[1] (the "*Team(s)*") carrying out the experiment.

This document also addresses the role of the Host Laboratory[2]. The role of the FAIR GmbH and the GSI GmbH as Host Laboratory for FAIR has to be distinguished from their scientific role and responsibility as members of any Collaboration.

1. SCOPE OF APPLICATION

1.1 The General Conditions apply to Approved Experiments[3] (the Experiments) carried out at the FAIR Site[4].

2. PARTIES AND THEIR REPRESENTATION

2.1 The parties concerned are:

- The Host Laboratory;
- The Collaborating Institutions.

2.2 Each party shall have a representative:

- The host laboratory shall be represented by the FAIR Scientific Managing Director.
- The Collaboration shall appoint a ***Spokesperson,*** who shall represent the Collaboration to the outside, including to the Host Laboratory, and who co-ordinates its work. Where the Spokesperson is not stationed full-time at FAIR, the Collaboration shall also appoint a contact person at FAIR.
- Each Collaborating Institution shall appoint a ***Team Leader*** who shall represent it in its relations with the Host Laboratory. The Team Leader is also responsible for the registration of all team members of the Collaborating Institution.

2.3 Each Collaborating Institution shall ensure that the members of its Teams (the "Team Member(s)") comply with the General Conditions.

3. BASIC DOCUMENTS GOVERNING THE COLLABORATION

3.1 The following documents shall constitute the formal basis for experiments performed at FAIR:

3.1.1 the ***EXPERIMENTAL PROPOSAL***, which has to be approved according to the regulations for Approved Experiments;

3.1.2 the ***TECHNICAL DESIGN REPORTS***, where appropriate;

3.1.3 the ***MEMORANDUM OF UNDERSTANDING*** **(**the **"*MoU*"),** which sets out the detailed arrangements specific to the individual Experiments and which shall be agreed and signed by the Host Laboratory and the Collaborating Institutions, for the purpose of signature represented, as the case may be, by their Funding Agencies[5]. Through the signature of the MoU, the Collaborating Institutions accept its terms;

3.1.4 the ***GENERAL CONDITIONS***.

Contents of the MoU

3.2 The MoU may be a single document setting out the arrangements for construction, installation, maintenance and operation, or it may comprise two

documents, one for construction and installation and the other for maintenance and operation. As a guide, the essential parts of the MoU are the following:

a) a list of the Collaborating Institutions responsible for the Teams carrying out the Experiment;

b) a list of the Funding Agencies of the Collaboration;

c) the management structure of the experiment Collaboration, i.e. details of the persons with specific responsibilities (e.g.: Spokesperson, Collaboration Board Chair, Technical Coordinator, Resource Coordinator, etc.);

d) the obligations of the Parties for:

i) construction and installation

- the commitments for construction and installation of the detector components and the auxiliary equipment (jointly the "Equipment");
- a breakdown of the funding requirements for the Equipment, together with the contributions of the Parties;
- a timetable for the construction and installation of the Equipment;

ii) maintenance and operation

- the commitments for maintenance and operation of the Equipment;

e) an explicit statement that the General Conditions apply;

f) references to any specific agreements and protocols relevant to the Experiment, copies of which shall be included as appendices to the MoU.

4. ORGANISATION OF THE COLLABORATION

Internal autonomy and co-ordination with the Host Laboratory

4.1 In its internal relations, the Collaboration shall be free to take such organisational decisions as deemed necessary, always subject to the terms of the MoU and the General Conditions.

Co-ordination in matters of safety

4.2 A Group Leader in Matters of Safety (GLIMOS) shall be appointed, on the proposal of the Spokesperson of an Approved Experiment. The responsibilities of the GLIMOS are defined by the occupational safety and health regulations on the FAIR Site.

Resources Review Board

Initial decision

4.3 For Experiments involving large capital investments, a ***Resource Review Board (RRB)*** may be set up by agreement of the Host Laboratory and the Collaboration

Membership

4.4 The RRB shall consist of one representative of each Funding Agency, along with the managements of the Host Laboratory and the Collaboration. Each Funding Agency may appoint a scientific advisor, who participates at the RRB as well.

Terms of reference

4.5 The role of the RRB includes:

- reaching agreement on the MoU;
- reaching agreement on any modification of, or addition to, the Experiment that would require amending the MoU;
- monitoring the use of the Common Funds[6];
- monitor the use of the maintenance and operation funds;
- monitoring the general financial status.

4.6 The Collaboration management reports to the RRB on technical, managerial, financial and administrative matters and on the composition of the Collaboration.

5. OBLIGATIONS OF THE HOST LABORATORY

All obligations of the Host Laboratory need to be agreed on in the MoU. The usual procedure is to agree on the following obligations:

Installation

5.1 The Collaboration shall ensure that the equipment and counting rooms meet the safety rules. Provided that this is the case, the Host Laboratory shall agree to their installation in the appropriate experimental area.

Duration

5.2 The Host Laboratory shall agree to keep the equipment on-site during installation and data taking for the approved experimental programme.

Network connections

5.3 The Host Laboratory agrees that computers and peripherals belonging to the Collaboration, which are needed for the operation of detectors and auxiliary equipment, may be connected to the computer network, provided they meet the compatibility and security standards.

Insurance

5.4 The Host Laboratory's insurance policies apply.

User support and Users' Office

5.5 The Host Laboratory will provide access to its services for users of an Experiment. The Host Laboratory operates a Users' Office as a point of contact with the user community. The Users' Office will be implemented progressively by the start of full FAIR operation, will provide assistance on questions concerning access to the services provided by the Host Laboratory and will disseminate a control slip on mandatory procedures, in particular regarding safety and radiation protection.

Standard services

5.6 For the duration of the experiment the Host Laboratory will generally provide within the limits and general constraints imposed by the available resources and schedules of accelerators, by the tax legislation, the standard services and facilities listed as follows:

5.6.1 Particle beams and equipment such as

- particle beams and related shielding, monitoring equipment and standard communication with the accelerator control rooms,
- beam time allocation and scheduling, following the recommendations of the relevant scientific committees,
- test beam time for testing prototypes and calibrating final detector elements, subject to the normal scheduling and allocation procedures.

5.6.2 Space such as

- floor space in the experimental area(s) for the Experiment,
- laboratory and hall space for construction, testing and assembly of equipment,
- temporary, short-term storage place for spare parts, handling and assembly tools, detector and auxiliary equipment that is awaiting installation or removal. The Host Laboratory reserves the right to charge the cost of longer term storage of the above items to the Collaborating Institution(s) concerned,
- office space, equipped with standard furniture and infrastructure facilities, including network connections, telephones and electricity.

5.6.3 Supplies and installations at the experiment such as

- assistance with the installation and removal of the experimental equipment (provision of crane and rigging services, geometrical survey and alignment, transport of equipment on and between the parts of the Host Laboratory's site as well as inside the experimental areas). The Host Laboratory reserves the right to charge the cost of the above items to the Collaborating Institution(s) concerned,
- mechanical infrastructure, local infrastructure for the supply of mains electricity, raw cooling water, compressed air and standard connections to the Host Laboratory's communication network. The

Host Laboratory reserves the right to charge the cost of the above items to the Collaborating Institution(s) concerned.

5.6.4 Computing such as

- central computing resources for the Collaboration for the duration of the experiment in accordance with the Host Laboratory's allocation procedures. The Host Laboratory reserves the right to charge the cost of the above items to the Collaborating Institution(s) concerned.

5.6.5 Safety services such as

- access to its safety services for advice, inspection and control, and first aid or other emergency help,

5.6.6 Administrative services such as

- access to the Host Laboratory's administrative services to help the Collaboration in financial matters in accordance with the financial and administrative provisions for Visiting Research Teams.

5.6.7 Purchasing services

- access to its purchasing services to assist the Collaboration in placing purchase orders and contracts for its account.

5.6.8 Maintenance and operation

- the resources needed to operate and maintain the standard infrastructure and other equipment supplied by the Host Laboratory.

Special services

5.7 A variety of services other than those specified above may be provided to the Collaboration on request, subject to the availability of resources. Such services will be charged according to the applicable conditions.

Special equipment

5.8 Any additional infrastructure equipment to be provided by Host Laboratory, as well as the obligations of the Host Laboratory and the Collaborating Institutions with regard to the construction, installation, maintenance and operation of such equipment, shall be explicitly mentioned in the MoU.

6. OBLIGATIONS OF THE COLLABORATING INSTITUTIONS

Basic obligations

6.1 The Team Members shall comply with the rules and regulations in force at the Host Laboratory. Items brought onto the site by the Collaboration are subject to the rules and regulations in force at the Host Laboratory.

Status of personnel

6.2 Each Collaborating Institution shall ensure that its Team Members shall for the duration of their stay at the Host Laboratory remain employed by, and receive a salary from, their Collaborating Institution. It is understood that where they are students, the Team Members shall remain enrolled at their Collaborating

Institution, and where they have a sponsor, they shall remain under contract with, and continue to be financed by, their sponsor.

6.3 Each Collaborating Institution shall ensure the provision of adequate social and third party liability insurance cover to its Team Members and the members of their family accompanying them. The social insurance must include cover against the financial consequences of illness and accidents that is adequate for the duration of stay at the Host Laboratory.

6.4 Each Collaborating Institution shall be liable to the Host Laboratory for any cost or expense resulting from the situation where its Team Members have insufficient insurance cover.

Medical surveillance and certificates

6.5 Each Collaborating Institution shall remain responsible for the medical surveillance of its Team Members and, in the case of Team Members who are to work in conditions which are deemed to pose special risks (e.g. radiation controlled areas), shall supply to the Safety and Radiation Protection Service a certificate of medical fitness, for the first time at the beginning of stay at the Host Laboratory and then every two years thereafter.

Safety briefings and inspections

6.6 The Collaborating Institutions, in conjunction with the responsible department at the Host Laboratory, shall ensure the safety of the Team Members and the equipment. Collaborating Institutions shall participate in safety meetings and studies of the Experiment. They shall ensure compliance by the Team Members with the safety rules of the Host Laboratory. Each Team member has specific safety responsibilities and obligations and shall attend the Host Laboratory's safety courses and training. In addition, all specific safety courses deemed necessary by the Collaboration shall be attended. The safety personnel of the Host Laboratory shall be entitled to carry out safety inspections as well as other safety measures.

Supply of equipment

6.7 The Collaborating Institutions shall make available at the FAIR Site, according to an agreed timetable and in working order, the equipment that they have undertaken to supply and commission. The spokesperson shall promptly inform the Research Director of any material failure to meet the agreed schedule. For experiments with an RRB, this body shall monitor such matters.

Transport, installation and dismantling of equipment

6.8 Each Collaborating Institution supplying equipment shall be responsible for its delivery to and removal from the FAIR Site, always in compliance with applicable export laws and restrictions. All such Equipment shall be properly documented to indicate its ownership status, handling requirements and any potential hazards that it may pose. The Collaborating Institutions shall be collectively responsible for the installation and dismantling of the equipment.

Ownership of equipment

6.9 Except as may be agreed in writing by the owner and the Host Laboratory, the delivery of equipment to the FAIR Site or its handling on the FAIR Site shall not affect its ownership. The owner and the Host Laboratory may agree in writing to

transfer to the Host Laboratory the ownership of equipment which is no longer required by the Collaboration.

Ownership inventory

6.10 As a condition of coverage by the insurance policy of the Host Laboratory, the Collaboration shall provide the Host Laboratory with a list of the equipment which it brings on the FAIR Site, specifying for each item the owning Collaborating Institution(s) or joint ownership by the Collaboration. It shall keep the list up-to-date and inform the Host Laboratory promptly of any modifications.

Maintenance and operation of equipment

6.11 The Collaborating Institutions shall be collectively responsible for the maintenance and operation of the equipment, and for providing the resources necessary to carry out the experimental programme.

Assignment of equipment

6.12 Any Collaborating Institution providing equipment shall continue to make it available to the Collaboration until the Experiment has been declared completed.

Early removal of equipment

6.13 The Collaboration may request the removal from the FAIR Site under the responsibility of the owning Collaborating Institution(s) of any equipment which in the opinion of the Collaboration is no longer required for the Experiment.

Release of space

6.14 Space allocated for construction and assembly shall be released when these activities have terminated. The Host Laboratory reserves the right to change the space allocation during the lifetime of the Experiment. As soon as the Experiment has been declared completed, all space used by the Collaboration, including office and laboratory space, and the space used for testing and running the Experiment, shall be made available to the Host Laboratory for reallocation.

Removal of equipment

6.15 Equipment shall be removed from the FAIR Site under the responsibility of the owning Collaborating Institution(s) within six months following a request from the leader of the responsibly department of the Host Laboratory.

6.16 The dismantling and removal of the equipment must respect the safety rules of the Host Laboratory and the laws of the countries through which the dismantled equipment will transit during the removal, including the country of its final destination (e.g. transport, disposal, elimination of special or radioactive waste).

Except as may be agreed in writing by the Collaboration and the Host Laboratory, the associated costs shall be borne by the Collaboration.

7. INTELLECTUAL PROPERTY

Publication and use of data and knowledge

7.1 The Host Laboratory is bound by its Convention to publish or otherwise make generally available the results of its experimental and theoretical work.

7.2 The Collaborating Institutions shall strive to publish any data and knowledge resulting from the Experiment through open access journals. Where the copyright in an article shall be transferred to the publisher, each Collaborating Institution shall ensure that it has the necessary internal authorisations to approve such a transfer.

7.3 Subject to Articles 7.4 and 7.5, each Collaborating Institution and the Host Laboratory shall be entitled to use any data and knowledge resulting from the Experiment for its own scientific non-military purposes.

Contribution of proprietary information

7.4 A Collaborating Institution contributing proprietary information to the Collaboration shall ensure that it has or has procured the rights to use, and to contribute to the Collaboration for use by the other Collaborating Institutions, such proprietary information for the execution of the Experiment. The term "use" shall include any integration, modification, enhancement and redistribution. Where the use of proprietary information is subject to restrictions, the contributing Collaborating Institution shall disclose them in writing when making its contribution available to the Collaboration. The obligations defined in this article shall apply whether or not the proprietary information is pre-existing or developed in the execution of the Experiment, and whether or not it was developed individually or jointly with one or more other institution(s).

Use of proprietary information

7.5 The contribution by a Collaborating Institution of any proprietary information, including information protected by trademark, patent or copyright, shall not create any right in respect of such information for the other Collaborating Institutions, other than a free, irrevocable and non-exclusive licence to use such information in the execution of the Experiment.

Publication and disclosure of proprietary information

7.6 Subject to the intellectual property rights of the Collaborating Institutions having contributed the proprietary information and taking into account any potential for commercial exploitation, the Collaborating Institutions shall strive to publish and make publicly available all proprietary information contributed to the Collaboration. In particular, they shall consider making any software available under Open Source licence conditions.

Limitation of liability

7.7 The Collaborating Institutions provide no warranties or representations of any kind to each other. Each Collaborating Institution shall use the data and knowledge resulting from the Experiment and the proprietary information

contributed to the Collaboration at its own risk. The Collaborating Institutions shall have no liability to each other with respect to the subject matter of this Article 7.

8. FINAL PROVISIONS

Modification of the Experiment and amendment to the MoU

8.1 The Collaboration shall agree on any modification of or addition to the Experiment that would require amending the MoU and shall inform the Host Laboratory of such changes. For experiments with an RRB, such changes shall also be endorsed by this body. Where the changes constitute a substantial change to the Experiment, they shall be submitted to the management of the Host Laboratory. Any amendment to the MoU shall be signed by the representatives of the parties to the MoU.

Duration of applicability of the MoU

8.2 Unless another duration is specified in the MoU, the MoU shall remain in force until the Experiment has been declared completed, the equipment has been dismantled and the arrangements for its disposal have been agreed in writing.

8.3 Notwithstanding the foregoing, the General Conditions shall remain in force.

Export control

8.4 All activities under this Agreement will be conducted in compliance with applicable export control and economic sanction laws and regulations. Each Party shall not knowingly transfer any export-controlled item, data, or services, including the transfer to persons employed by, associated with, or under contract to the Party or the Party's Subcontractors, without the authority of an export license, agreement, or applicable exemption or exception. To the extent that information disclosed is export controlled the Parties agree to comply with all regulations regarding its use, disclosure, export, and transfer.

Liability

8.5 Except as specifically stipulated in the General Conditions, the Parties shall not be liable to each other for any loss or damage arising in connection with the Experiment.

Arbitration

8.6 If a dispute within the Collaboration or between the Collaboration and the Host Laboratory cannot be resolved amicably, it shall be referred by any party to the dispute for arbitration to the Chair of the FAIR Council, whose decision shall be binding and final, without right of revision or appeal.

Definitions

[1] **Visiting Research Team**: A Collaborating Institution's personnel involved in the Experiment.

[2] **Host Laboratory:** The Facility for Antiproton and Ion Research in Europe GmbH (FAIR GmbH) and the GSI Helmholtzzentrum für Schwerionenforschung GmbH jointly represent the Host Laboratory. The details will be subject of an agreement between both legal entities.

[3] **Approved Experiment**: An experiment approved by the FAIR Scientific Director after consideration of a written proposal evaluated by the appropriate experiment/program advisory committee, taking into account scientific interest, technical feasibility and the constraints imposed by available resources.

[4] **FAIR Site**: The premises of FAIR, independent on the legal ownership of the FAIR GmbH, the GSI GmbH or a third party.

[5] **Funding Agency**: A body providing resources to one or more of the Collaborating Institutions for the purpose of participation in the Experiment. A Collaborating Institution, or whoever has to the authority to commit the necessary resources, may itself be a Funding Agency.

[6] **Common Funds**: Funds contributed by the Funding Agencies to cover any common expenses of the Collaboration.

Annex 10: The CBM Day 1 experimental setup

The CBM start version at SIS100 (MSV) and the CBM Day 1 setup

The CBM Day-1 setup will be in place to take the first beam from SIS100. The first data taking with the CBM day 1 at SIS100 will concentrate on high-rate measurements of hadrons including multi-strange hyperons and hypernuclei, and dileptons. The hadron measurements will be performed with an experimental setup comprising the dipole magnet, the Silicon Tracking System, the Time-of-Flight detector, the Projectile Spectator Detector for event characterization, the free-streaming data readout and acquisition system, and a high-speed First Level Event Selection. The identification of electron-positron pairs requires in addition the Micro Vertex Detector, the Ring Imaging Cherenkov detector, and a start version of the Transition Radiation Detector. Muon pairs will be measured with the Muon Chamber system.

The CBM Day 1 setup does not include the ECAL. The Day 1 setup will have the full connectivity; 100% of the Front End will be in place. However the Day 1 setup will have a limited Bandwidth. Only a fraction of the Entry Nodes will be available at the Back End.

Table 1 gives an overview on the definition of both CBM versions:

	CBM Day 1 setup	**CBM start version (MSV)**
Micro Vertex Detector (MVD)	yes	yes
Silicon Tracking System (STS)	yes	yes
Ring Image Cherenkov Detector (RICH)	yes	yes
Muon Detector (MUCH)	yes	yes
Transition Radiation Detector (TRD)	yes	yes
Time of Flight System (TOF)	yes	yes
Electromagnetic Calorimeter (ECAL)	no	yes
Projectile Spectator Detector (PSD)	yes	yes
Dipol MAGNET	yes	yes
Online Systems (DAQ and FLES)	yes	yes
- Front End	100%	100%
- Back End (entry nodes)	20%	100%
Infrastructure	yes	yes