Amendment Construction MoU and update Construction Common Fund for the CBM experiment

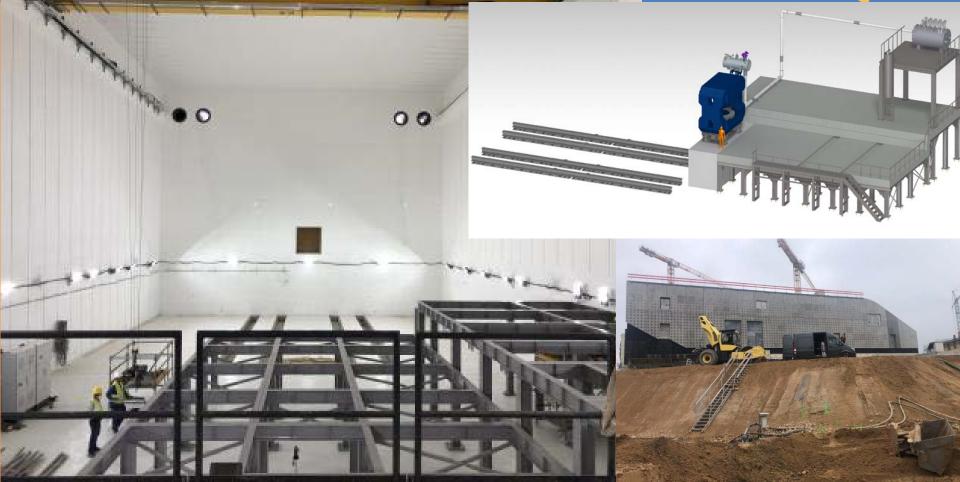
13th CBM Resource Review Board meeting

16th May 2024

Report CBM Resource Coordinator

Jürgen Eschke





RRB process → Construction MoU → M&O MoU

1st meeting of FAIR RRBs 04 – 05 July 2013



2012 2013 ------2020

2024

2027

RRB process \rightarrow

signing CBM C-MoU Amendment M&O MoU

Content presentation

- Status Signing C-MoU
- updated Construction timeline CBM
- Construction Common Fund / Status payments
- new Spending profile Common Infrastructure/Procurements for Common Infrastructure
- CBM proposal for Amendment to C-MoU on Common Fund
- ECE/ECSG evaluation of Amendment
- Outlook CBM Maintenance & Operation MoU

Status CBM Construction MoU



- The CBM C-MoU was evaluated by the ECSG/ECE (18.3.20) → recommendation to RRB to agree on start of signing
- Final submission to Funding Agencies in RRBs in April 2020
- Final ok for signing of Funding Agencies in 24 June 2020
- Signing of C-MoU by FAIR, GSI and CBM spokesperson in August 2020

Start of distribution to Ministries and Funding Agencies and to the

CBM full member institutions

in October 2020



Country	Funding agency	Signature received
		٧
China	Central China Normal University (CCNU)	
China	Tsinghua University (THU)	V
China	University of Science & Technology (USTC)	٧
Czech		٧
Republic	Ministry of Education, Youth and Sports (MSMT)	
Germany	Bundesministerium für Bildung und Forschung (BMBF)	٧
Germany	GSI Helmholtzzentrum GmbH	٧
Hungary	WIGNER RCP	٧
India	Department of Science & Technology (DST)	
Korea	Pusan National University	٧
Poland	Ministry of Higher Education in Poland	expected
Romania	Atomic Physics Institute (AFI) for Ministry of Research, Innovation and Digitalization	٧
Russian		
Federation	ROSATOM	
Russian		
Federation	National Research Centre Kurchatov Institute	
International	Laint Institute for Nuclean Decemb (UNID)	V
Organisation	Joint Institute for Nuclear Research (JINR)	ovpoctod
Ukraine	NASU / State Agency of Ukraine	expected

The majority
of the funding agencies
and of the
CBM member institutions
have signed the
CBM Construction MoU
already!

clarification with ministry in India

→ causes delay in signing of CBM C-MoU

no signing of CBM C-MoU,
since membership of
Russian Institutions (plus JINR)
is terminated

Status CBM Construction MoU signatures from CBM member institutions 16.05.2024

Institute	Country	Signed page received
Tsinghua (THU)	China	V
USTC	China	√
CCNU	China	√
Uchongqing	China	expected
CTGU	China	√
СТИ	Czech Republic	√
NPI-CAS	Czech Republic	√
ZIB	Germany	√
FAIR	Germany	√
GSI	Germany	√
IKP-TUD	Germany	√
HZDR	Germany	expected
FIAS	Germany	√
IKF-UFra	Germany	√
IRI-UFra	Germany	√
UGiessen	Germany	√
PI-UHd	Germany	√
KIT	Germany	expected
ZITI-UHd	Germany	√
UMuenster	Germany	√
UTuebingen	Germany	√
UWuppertal	Germany	√
ELTE	Hungary	√
WignerRCP	Hungary	√
AMU	India	
IOPB	India	
NISER	India	
UPanjab	India	
UGauhati	India	√
IIT-I	India	
UJammu	India	
IIT-KGP	India	
Bose	India	
UCalcutta	India	
VECC	India	
UKashmir	India	
UBanaras	India	

PNU	Korea	V
AGH	Poland	expected after ministry has signed
UJagiellonian	Poland	expected after ministry has signed
TUWarsaw Institure of Electro.	Poland	expected after ministry has signed
TUWarsaw Faculty of Physics	Poland	expected after ministry has signed
UWarsaw	Poland	expected after ministry has signed
IFIN-HH	Romania	V
UBucharest	Romania	√
JINR-LIT	Russia	√
JINR-VBLHEP	Russia	√
PNPI	Russia	not expected anymore
INR	Russia	not expected anymore
ITEP	Russia	not expected anymore
MEPH	Russia	not expected anymore
NRC-KI	Russia	not expected anymore
SINP MSU	Russia	<u>√</u>
KINR	Ukraine	V
UKyiv	Ukraine	expected
number of signator	ies:	29

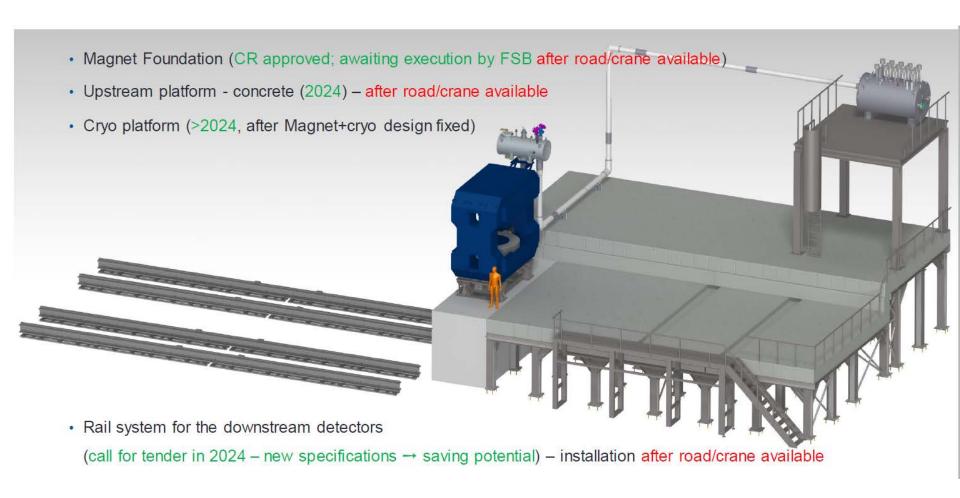
membership in CBM Collaboration terminated

expected

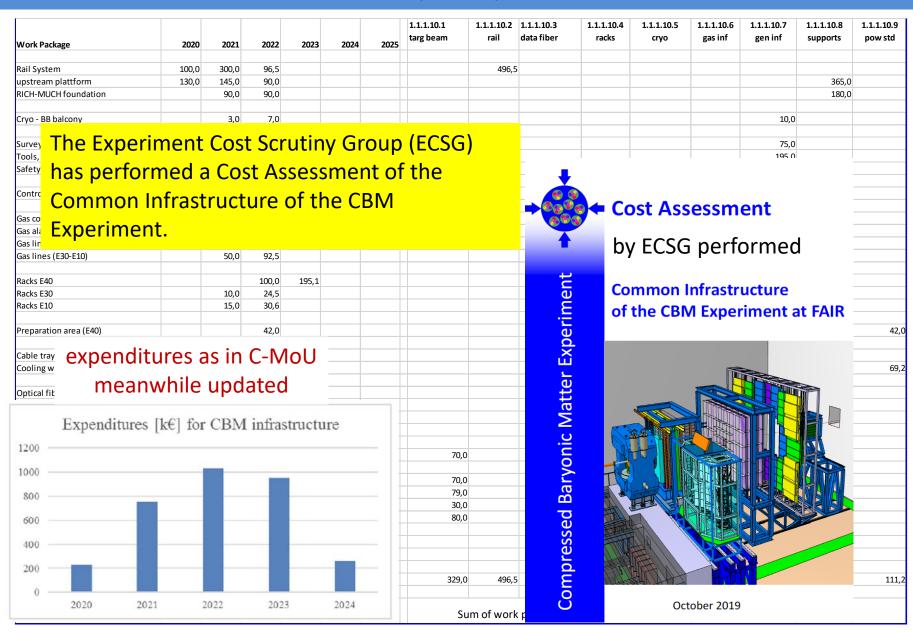
Signatures of Indian and Polish
CBM member institutes expected
after
clarification with ministries in
India and Poland
on additional funding for FAIR
construction



Costs for common infrastructure procurements Common infrastructure installations in CBM cave



CBM Common (cave) infrastructure



23.02.2022 11th CBM RRB Jürgen Eschke, CBM RC 7

CBM Common Fund (C-MoU 2020)

Breakdown of the annual contributions to the CBM Common Fund for the member institutes of the CBM collaboration (CBM data base 13th November 2019 is bases for calculation of due amounts):

2020: 1000€ /PhD holder

2021: 3265€ /PhD holder 2022: 4469€ /PhD holder

2023: 4184€ /PhD holder

2024: 1130€ /PhD holder

in total per PhD holder:

14049 €

2810 € per year on average

→ flexible payment possibilities included in final C-MoU text

	C	all CBM	PhD-	PhDs +	common fund	common fund	common fund	common fund		Tatal [6]	Total per	Fraction
nstitute	Country	members	Students	Profs	2020 [€] 1000,00	2021 [€]	2022 [€]	2023 [€] 4184,35	2024 [€]	Total [€] 14048,70	country [€]	country
					EURO per	3265,22 EURO per	4468,70 EURO per	EURO per	1130,43 EURO per	EURO per		+
					PhD/Prof	PhD/Prof	PhD/Prof	PhD/Prof	PhD/Prof	PhD/Prof		
Singhua (THU)	China	6	1	5	5.000	16.326	22.343	20.922	5.652	70.243		
JSTC	China	10	5	2	2.000	6.530	8.937	8.369	2.261	28.097		
CNU	China	11	3	8	8.000	26.122	35.750	33.475	9.043	112.390		
Jchongqing	China	3	0	2	2.000	6.530	8.937	8.369	2.261	28.097		
TGU	China	4	1	3	3.000	9.796	13.406	12.553	3.391	42.146	280.974	8,7
TU IPI-CAS	Czech Republic Czech Republic	3	0	2	1.000 2.000	3.265 6.530	4.469 8.937	4.184 8.369	1.130 2.261	14.049 28.097	42.146	1,3
	Czecii Kepublic	3	1		2.000	6.530	8.937	8.309	2.261	28.097	42.140	1,
PHC (associated nember)	France				0	0	0	0	0	0	0	0,0
IB	Germany	4	0	3	3.000	9.796	13.406	12.553	3.391	42.146		- 0,0
AIR	Germany	3	0	3	3.000	9.796	13.406	12.553	3.391	42.146	1	
isi	Germany	52	5	36	36.000	117.548	160.873	150.637	40.696	505.753	i	
(P-TUD	Germany	3	2	1	1.000	3.265	4.469	4.184	1.130	14.049		
IZDR	Germany	5	0	4	4.000	13.061	17.875	16.737	4.522	56.195		
IAS	Germany	10	5	5	5.000	16.326	22.343	20.922	5.652	70.243		
KF-UFra	Germany	20	6	9	9.000	29.387	40.218	37.659	10.174	126.438		
RI-UFra	Germany	4	2	1	1.000	3.265	4.469	4.184	1.130	14.049		
lGiessen	Germany	12	4	5	5.000	16.326	22.343	20.922	5.652	70.243	ŀ	
I-UHd IT	Germany	7 8	3	3	2.000 3.000	6.530 9.796	8.937 13.406	8.369	2.261	28.097 42.146		
ITI-UHd	Germany	1	0	1	1.000	3.265	4.469	12.553 4.184	3.391 1.130	14.049	ł	
Muenster	Germany	13	3	3	3.000	9.796	13.406	12.553	3.391	42.146	İ	
Tuebingen	Germany	7	5	2	2.000	6.530	8.937	8.369	2.261	28.097	İ	
Wuppertal	Germany	7	2	3	3.000	9.796	13.406	12.553	3.391	42.146	1.137.944	35,
LTE	Hungary	2	0	1	1.000	3.265	4.469	4.184	1.130	14.049		<u> </u>
VignerRCP	Hungary	2	1	1	1.000	3.265	4.469	4.184	1.130	14.049	28.097	0,8
MU	India	4	1	3	3.000	9.796	13.406	12.553	3.391	42.146		
OPB	India	3	0	2	2.000	6.530	8.937	8.369	2.261	28.097		
IISER	India	4	0	4	4.000	13.061	17.875	16.737	4.522	56.195		
IPanjab	India	2	0	2	2.000	6.530	8.937	8.369	2.261	28.097		
JGauhati T-I	India India	3	1	2	1.000 2.000	3.265 6.530	4.469 8.937	4.184 8.369	1.130 2.261	14.049 28.097	•	
JJammu	India	4	0	2	2.000	6.530	8.937	8.369	2.261	28.097	i	
T-KGP	India	1	0	1	1.000	3.265	4.469	4.184	1.130	14.049	İ	
ose	India	10	3	6	6.000	19.591	26.812	25.106	6.783	84.292	İ	
JCalcutta	India	3	0	3	3.000	9.796	13.406	12.553	3.391	42.146		
ECC	India	11	7	4	4.000	13.061	17.875	16.737	4.522	56.195		
Kashmir	India	6	0	3	3.000	9.796	13.406	12.553	3.391	42.146		
Banaras	India	4	1	3	3.000	9.796	13.406	12.553	3.391	42.146	505.753	15,
NU	Korea	1	0	1	1.000	3.265	4.469	4.184	1.130	14.049	14.049	0,4
GH	Poland	8	1	7	7.000	22.857	31.281	29.290	7.913	98.341		
JJagiellonian	Poland	6	0	5	5.000	16.326	22.343	20.922	5.652	70.243		
UWarsaw	Poland	8	3	5	5.000	16.326	22.343	20.922	5.652	70.243	200.005	
Warsaw	Poland	2	0	2	2.000	6.530	8.937	8.369	2.261	28.097	266.925	8,3
FIN-HH JBucharest	Romania	5 9	1	8	4.000 8.000	13.061 26.122	17.875 35.750	16.737 33.475	4.522 9.043	56.195 112.390	168.584	5,2
NR-LIT	Romania Russia	7	1	6	6.000	19.591	26.812	25.106	6.783	84.292	100.304	 3,
NR-UII NR-VBLHEP	Russia	17	1	7	7.000	22.857	31.281	29.290	7.913	98.341	İ	
NPI	Russia	15	0	11	11.000	35.917	49.156	46.028	12.435	154.536		
NR	Russia	10	3	3	3.000	9.796	13.406	12.553	3.391	42.146	İ	
ГЕР	Russia	18	2	9	9.000	29.387	40.218	37.659	10.174	126.438		
/IEPhI	Russia	11	2	8	8.000	26.122	35.750	33.475	9.043	112.390		
IRC-KI	Russia	5	0	3	3.000	9.796	13.406	12.553	3.391	42.146		
INP-MSU	Russia	6	2	3	3.000	9.796	13.406	12.553	3.391	42.146		
HEP	Russia	7	0	1	1.000	3.265	4.469	4.184	1.130	14.049	716.483	22,
INR	Ukraine	6	2	1	1.000	3.265	4.469	4.184	1.130	14.049	70.242	 -
JKyiv	Ukraine	4	0	4	4.000	13.061	17.875	16.737	4.522	56.195	70.243	2,:

Status payments into CBM Construction Common Fund

Due ammount 2810€ per year per PhD-Holder

		Common Fund	down payments	down payments	down payments
Institute	Country	Total [€]	until end 2021	in 2022	in 2023
		2810,00			
		EURO per			
		PhD/Prof/yea			
		r			
Tsinghua (THU)	China	70.243	1		
USTC	China	28.097	navment	request	
CCNU	China	112.390		•	
Uchongqing	China	28.097	in prepa	ration	
CTGU	China	42.146			
СТИ	Czech Republic	14.049	•		
NPI-CAS	Czech Republic	28.097	42.146		
IPHC (associated					
member)	France	o			
ZIB	Germany	42.146	0	43.000	
FAIR	Germany	42.146	•	43.000	
GSI	Germany	505.753	505.753		252.900
GSI (Group Ritman)	· '	303.733	303.733		40.000
IKP-TUD	Germany	14.049	0		40.000
HZDR	Germany	56.195	U		
FIAS	Germany	70.243	0		
IKF-UFra	Germany	126.438	100.000		
IRI-UFra	Germany	14.049	0		
UGiessen	Germany	70.243			
PI-UHd	Germany	28.097	100.000 91.000		
KIT	Germany	42.146	0		
ZITI-UHd	Germany	14.049	0		
UMuenster	Germany Germany	42.146	92.000		
	· ·	_	0		
UTuebingen UWuppertal	Germany	28.097 42.146	0	100.000	
ELTE	Germany	14.049	U	100.000	
WignerRCP	Hungary Hungary	14.049	14.049		
AMU	India	42.146	14.049		
IOPB	India	28.097			
NISER	India	56.195			
UPanjab	India	28.097			
UGauhati	India	14.049			
IIT-I	India	28.097			
UJammu	India	28.097			
IIT-KGP	India	14.049			
Bose	India	84.292			
UCalcutta	India	42.146			
VECC VECC	India	_			
VECC UKashmir	India	56.195 42.146			
		-			
UBanaras	India	42.146			

PNU	Korea	14.049			
AGH	Poland	98.341			
UJagiellonian	Poland	70.243			
TUWarsaw	Poland	70.243			
UWarsaw	Poland	28.097			
IFIN-HH	Romania	56.195	17.061	17.875	16.737
UBucharest	Romania	112.390	22.500	17.400	16.000
JINR-LIT	Int. Organization	84.292	39.000		
JINR-VBLHEP	Int. Organization	98.341	39.000	Ι.	
PNPI	Russia	154.536		membe	ersnip
INR	Russia	42.146		in CBM	
ITEP	Russia	126.438		 -	
MEPhI	Russia	112.390		Collabo	oration
NRC-KI	Russia	42.146		termin	ated
SINP-MSU	Russia	42.146			
IHEP	Russia	14.049			
KINR	Ukraine	14.049			
UKyiv	Ukraine	56.195			
Total / year:			1.023.509	178.275	325.637
Total: Fond 471	.019				1.527.421

Total amount collected so far:

1,527 Million Euro

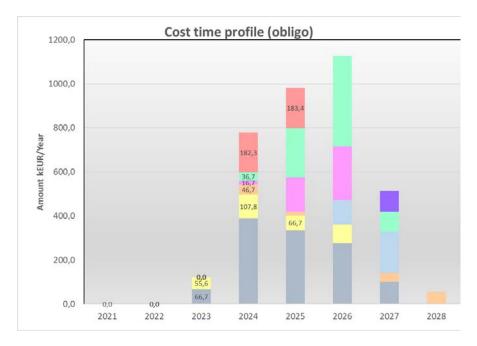
Amendment to CBM C-MoU required

There are three reasons, why an amendment to the CBM Construction MoU is necessary. All of them are a consequence of Russia's war against Ukraine.

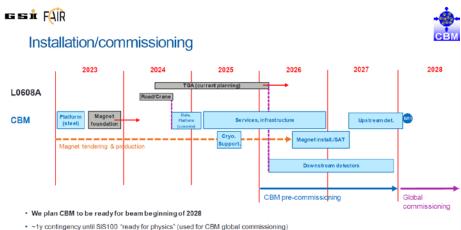
- 1. The termination of the CBM collaboration contracts with Russian In-kind providers (cancellation of Russian In-kind contributions to CBM experiment) by the FAIR council, requires a substantial update of the CBM cost and funding matrix, which defines who takes over the responsibility and funding of these items.
- 2. The re-procurement of missing (Russian) In-Kind contributions causes a delay of the construction timeline of the FAIR project and of the CBM experiment.
- → duration of the C MoU has to be extended
- 3. A compensation for the missing financial contributions from Russian institutes to CBM Common Fund has to be regulated. The additional costs for the procurement of the CBM infrastructure caused by inflation have to be compensated as well.

updated spending profile for CBM Common (cave) Infrastructure



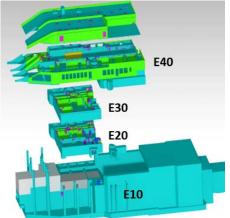


CBM installation – timeline re-baselining (2023)



*(C-MoU: 3,23 M€ (2019 prices) - escalated amount (2024 prices) 3,68 MEURO

			2021	2022	2023	2024	2025	2026	2027	2028
Mechanical structures	•	1168,6	0,0	0,0	66,7	389,0	335,1	277,8	100,0	0,0
E10 equipment etc.	•	313,4	0,0	0,0	55,6	107,8	66,7	83,4	0,0	0,0
E40 equipment		158,9	0,0	0,0	0,0	46,7	16,7	0,0	40,0	55,6
Gas infrastructure		300,5	0,0	0,0	0,0	0,0	0,0	111,1	189,4	0,0
Racks		417,0	0,0	0,0	0,0	16,7	156,3	244,1	0,0	0,0
Data transfer infrastructure		761,4	0,0	0,0	0,0	36,7	224,3	411,2	89,2	0,0
Beam transfer infrastructure	7	365,6	0,0	0,0	0,0	182,3	183,4	0,0	0,0	0,0
Beam dumps		94,5	0,0	0,0	0,0	0,0	0,0	0,0	94,5	0,0
		3580,0	0,0	0,0	122,3	779,1	982,4	1127,6	513,1	55,6
	20	23 prices								



updated spending profile for CBM Common (cave) Infrastructure

*(C-MoU: 3,23 M€ (2019 prices) - escalated amount (2024 prices) 3,68 MEURO

											CB
Work Package	*[k€] Price	2021	2022	2023	2024	2025	2026	2027	2028		
Rail System - Rails	329,5			55,6	222,3	51,7					
Rail System - Subframes	222,3				55,6	55,6	111,1				
Upstream Platform - Concrete	300,1			11,1	111,1	177,8				Mechanical structure	58,6
Upstream platform - Cryo platform	116,7					50,0	66,7			4.18	۷
RICH-MUCH foundation	200,0					0,0	100,0	100.0		c+rilCtui	
Rail System - Subframes Upstream Platform - Concrete Upstream platform - Cryo platform RICH-MUCH foundation Survey tools Tools, scaffolding, hoisting gear Safety gear Control room Preparation area (E40) Gas container (E40) Gas alarm survey Cooling water distribution	83,4				55,6	27,8			nfra	Sura	Λ
Tools, scaffolding, hoisting gear	216,7			55,6	38.0		m	on i	,,,,	:1 202	.4
Safety gear	13,3				-01	ΛCO	ייווון		4	Anrii 20-	
Control room	95,6			for	CRIA	100	-01	12 2	na	MP.	
Preparation area (E40)	AC-		afile	יטן		1-01	7.04	72 6		E40 equipment	158,9
Gas container (E40)	din	o DI	51119	- 1 -	Man	npei					
Gas alarm suci	Jani	5 F	- C i	$\sim NC$	JVEI		22,2	22,2			
dated Spc.	, . 	- ICC	56 1	11 15		0,0	33,3	64,3		Gas infrastructure	300,5
indates	, FCI	-/ -				0,0	55,6	102,8			
ated to						111,1	216,8				
presences	38,3					11,1	27,2			Racks	417,0
bica	50,7				16,7	34,0					
Cays	31,1				8,9	22,2					
					27,8					Data transfer	
Optical fibers (E10-E40)	469,7					136,3	333,4			infrastructure	761,4
Optical fibers (E40-IT)	133,7					0,0	44,5	89,2			
Control system back end	50,0					16,7	33,3				
Target Box+Holder	77,8				38,9	38,9					
Beam pipes	77,8				38,9	38,9				Beam transfer	
Vacuum pumps	87,8				43,3	44,5				infrastructure	365,6
Beam diagnosis box	33,3				16,7	16,7					
Beam abort system	88,9				44,5	44,5					
CBM beam dump (rest)	38,9							38,9		Beam dumps	94,5
HADES beam dump	55,6			100.5				55,6		•	,
Sum 2023 prices	3580,0	0,0	0,0	122,3	779,1	982,4	1127,6	513,1	55,6		



Common Fund procurements

 CBM Common Fund (CF) was established for the financing of the CBM common infrastructure (evaluated by ECSG and ECE)



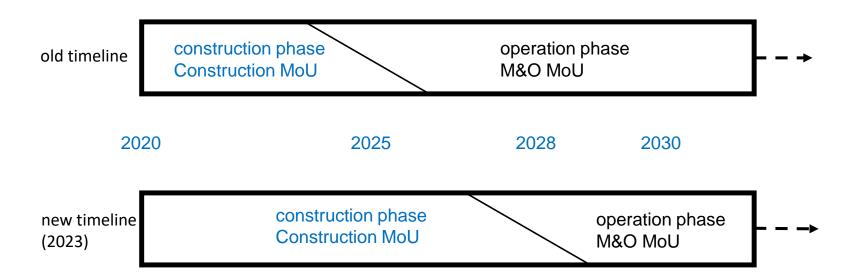


- 1.53 M€collected to date (Critical for success: sufficient budget for CF procurements)
- •~22% Russian contribution to Common Fund (0,711 M€) to be accommodated by other institution
- Compensation for cost increase due to inflation (~0,349 M€)
- → 1,06 M€ in addition needed!

update CBM Common Fund (Amendment C-MoU)

Due to the termination of the membership of the institutions in Russia contributions to the Common Fund of 0,711 M€ (~22%) are not covered at present. The CBM Collaboration Board has endorsed at its meeting in March 2023 the strategy to collect the annual due amounts per institute as defined in the CBM Construction MoU for 2 additional years, since the construction period will be about 2 years longer, as anticipated in the signed C-MoU. This procedure would assure that the annual contributions per CBM member institute remain unchanged. Only the transition of the construction phase to the operation phase of the CBM experiment will be shifted by about 2 years.

The annual due amount per PhD holder to the Common Fund in the CBM construction phase will be 2810 EURO. The annual due amount per PhD holder in the operation phase of CBM has to be determined. The M&O costs will be subject of the CBM Maintenance and Operations (M&O) MoU. Moreover, 0,349M€ compensation for inflation have to be collected.



update Common Fund regulated in Amendment:
Annual due amount per PhD holder in construction phase of 2810 EURO also to be collected in 2025 and 2026!

update CBM Construction Common Fund (Amendment C-MoU)



due amounts per institute in the years 2025 and 2026 for closing of funding gap

				phd		D+P%	due amount per PhD	due amount per PhD holder	sum 2025 & 2026		
Institute	City	Country	all		D+P (PhD holder)		holder (2810€) in 2025	(2810€) in 2026	[EURO]	per country [EURO]	
THU	Beijing	China	5	1	4	2,1%		` '	•		
UChongging	Chongqing	China	3	0	2	1,0%					
USTC	Hefei	China	6	2	2	1,0%					
CCNU	Wuhan	China	7	0	7						
CTGU	Yichang	China	4	0	4	-,-,-					
CTU	Prague	Czech	5	1	3	1,6%					
NPI-CAS	Řež	Czech	3	2	1	0,5%					
ZIB	Berlin	Germany	2	0	2						
RUB	Bochum	Germany	8	1	7	3,6%					
FAIR	Darmstadt	Germany	10	0	9						
GSI	Darmstadt	Germany	63	6	45	23,4%					
IKP-TUD	Darmstadt	Germany	4	3	1	0,5%					
HZDR	Dresden	-	4	3	- '	0,5%					
FIAS		Germany	40								
IKF-UFra	Frankfurt	Germany	13	6 9	6 8						
	Frankfurt	Germany	17	-							
IRI-UFra	Frankfurt	Germany	4	3	1	0,5%					
UGiessen	Gießen	Germany	7	3	2						
PI-UHd	Heidelberg	Germany	6	2	3						
ZITI-UHd	Heidelberg	Germany	1	0	1	0,5%					
KIT	Karlsruhe	Germany	8	1	4						
UMuenster	Münster	Germany	13	5	3						
UTuebingen	Tübingen	Germany	3	2	1	0,5%					
UWuppertal	Wuppertal	Germany	10	4	4	2,1%					
ELTE	Budapest	Hungary	1	0	1	0,5%					
WignerRCP	Budapest	Hungary	1	0	1	0,5%					
AMU	Aligarh	India	5	2	3						
IOPB	Bhubaneswar	India	3	0	2						
NISER	Bhubaneswar	India	3	0	3	1,6%	8.430 €	8.430 €	16.860 €		
UPanjab	Chandigarh	India	1	0	1	0,5%		2.810 €	5.620 €		
UGauhati	Guwahati	India	1	0	1	0,5%	2.810 €	2.810 €	5.620 €		
IIT-I	Indore	India	3	0	3	1,6%	8.430 €	8.430 €	16.860 €		
UJammu	Jammu	India	4	0	2	1,0%	5.620 €	5.620 €	11.240 €		
IIT-KGP	Kharagpur	India	1	0	1	0,5%	2.810 €	2.810 €	5.620 €		
Bose	Kolkata	India	11	3	8	4,2%	22.480 €	22.480 €	44.960 €		
UCalcutta	Kolkata	India	3	0	3	1,6%	8.430 €	8.430 €	16.860 €		
VECC	Kolkata	India	11	5	6	3,1%	16.860 €	16.860 €	33.720 €		
UKashmir	Srinagar	India	4	0	2						
BHU	Varanasi	India	3	1	2						
PNU	Pusan	Korea	1	0	1	0,5%					
AGH	Kraków	Poland	5	0	5	2,6%					
Wagiellonian	Kraków	Poland	8	0	6	3,1%					
oo agronornari	T ti di to ii	· Olana				0,170	10.000		00.720		*joined after C-MoU:
IF-WUT	Warsaw	Poland	3	0	3	1,6%	8.430 €	8.430 €	16.860 €		Amount for 2020-2024 is 42150€
ISE-WUT	Warsaw	Poland	7	2	3	1,6%		8.430 €	16.860 €		
UWarsaw	Warsaw	Poland	2	0	2						
IFIN-HH	Bucharest	Romania	5	0	4	,					
UBucharest	Bucharest	Romania	6	2	4	2,1%					
KINR	Kyiv	Ukraine	7	4	1	0,5%					
TSNU-Kyiv	Kyiv	Ukraine	4	0	4						
		CATAINO	-7	J		2,170	11.240	11.240 C	22.400 (20.100 €	
sum (all)			305	70	192	100,0%	539.520 €	539.520 €	1.079.040 €	1.079.040	€



Extention of duration of CBM C-MoU

The duration of the CBM Construction MoU has to be adapted to the new construction timeline of the FAIR project and of the CBM experiment.

Therefore, **Article 3** of the C-MoU is changed in the following way (changes are marked in red):

Article 3 Duration of this MoU and its Extension

- 3.1 This C-MoU is valid for the construction period of the CBM detector, from 1st April 2020 to a date not earlier than 31 December 2028. The actual termination date will be set by the CBM RRB no later than 31 December 2027. The construction phase ends after all construction workpackes are completed and the equipment is installed in the CBM cave.
- 3.2 The responsibilities for the maintenance and operation of the CBM detector is planned to be laid down in a separate *M&O-MoU* on maintenance and operation procedures, which will come into force in the operation phase of the CBM Experiment. The actual start date of the operation phase will be set by the CBM RRB no later than 31 December 2026. The M&O-MoU will be prepared by the CBM Collaboration together with FAIR GmbH, in consultation with the CBM RRB and will be signed by all the parties participating in the operation phase of CBM.



Additional contributions to CBM Common Fund

Article 6 Common Infrastructure and Construction Common Fund

There is the need to compensate for the missing financial contributions from Russian institutes to the CBM Common Fund (0,711 MEuro) and for the cost increase by inflation of 0,349 MEuro amounting to 1,06 MEuro. This requires additional contributions to the CBM Common Fund, which have to be collected to cover the expenses for the procurement of the CBM infrastructure items.

Therefore, to **Article 6** of the C-MoU the following paragraph (6.7) is added:

6.7 The CBM full member institutions have the obligation to pay the annual due amount for the Common Fund of 2810 EURO per PhD-holder per year also in the years 2025 and 2026 in order to compensate for the missing financial contributions from Russian institutes to the CBM Common Fund and for the cost increase of the CBM infrastructure items by inflation.

The table with the due amounts for the CBM full member institutions (as of 06.12.2023) in the years 2025 and 2026 is added to Annex 8 of the C-MoU.



Changes in the Annexes of the C-MoU

The CBM Collaboration Board has decided on April 4th, 2023 to terminate the membership of institutions in Russia (this includes JINR) in the CBM collaboration. The CBM Collaboration Data Base was updated accordingly. The list of member institutes and of the funding agencies is updated in this amendment. of the C-MoU with list of the member institutes of the CBM collaboration is updated s follows:

AMU Aligarh TNU Beijing ZIB Berlin LOPB Bebuhaneswar NISER Bhubaneswar NISER Bhubaneswar RIB Bochum IFIN-HH Bucharest ELTE Budapest ECTP Calor LOPanjab Chandigarh LOFA Chandigarh LOFA Chandigarh LOBiesia Chorzów GSI Darmstadt GSI Darmstadt GIR Darmstadt FIAS Frankfurt IRI-UFTa Frankfurt IRI-UFTa Frankfurt IRI-UFTa Frankfurt UGashati Gwahat UHiroshima Hiroshima IIT-I Indore UJammu Jammu SITT-MH Heidelberg UHiroshima Hiroshima IIT-S Krakow ULagelionian Krakow ULagelionian				Full Name of Institute
278 Berlin 10PB bibbaneswar 10PB bibbane	India	FULL		Department of Physics, Aligarh Muslim University
IOPPI Bhubaneswar NISER Bochum	China	FULL		Department of Engineering Physics, Tsinghua University
NISER Bhubaneswar RuB Bochurest Ubucharest Eucharest Ett Bucharest Ett Ett Budapest Ett Ett Budapest Ett Ett Budapest Ett Ett Budapest Ett Ett Budapest Ett Ett Budapest Ett Ett Budapest Ett Ett Budapest Ett Ett Budapest Ett Ett Budapest Ett Ett Budapest Ett Ett Budapest Ett Ett Budapest Ett Ett Budapest Ett Ett Budapest Ett Ett Budapest Ett	Germany	FULL		Zuse Institute Berlin (ZIB)
RUB Bochum FIFN-HH Bucharest BUCharest Bucharest Bucharest Bucharest Bucharest Budapest ECTP Cairo UPanjab Chandjarh UChongging Chongging Chongging Chongging FIFN FIFN FIFN FIFN FIFN FIFN FIFN FIF		FULL		Institute of Physics
JEIN-HH Bucharest ELTE Budapest Utloucharest Bucharest ELTE Budapest Utloucharest Budapest ELTE Carp Let Carp UPanjab Chandigarh USllesia Chorzów FAIR Darmstadt GSI Darmstadt GSI Darmstadt GSI Darmstadt FIAS Frankfurt IRT-UFD Frankfurt IRT-UFPa Frankfurt IRT-UFPa Frankfurt IRT-UFPa Frankfurt IRT-UFPa Frankfurt IRT-UFPa Frankfurt IRT-UFPa Frankfurt IRT-UFPa Frankfurt IRT-UFPa Frankfurt IRT-UFPa Frankfurt UGaushati Guwahati USTC Hefel P-UHd Heidelberg U-Hiroshima Hiroshima ITT-I Indore UTIT-UTIT-I Indore UTIT-UTIT-I Indore UTIT-UTIT-I Indore UTIT-UTIT-I Indore UTIT-UTIT-I Indore UTIT-UTIT-I Indore UTIT-I	FULL		National Institute of Science Education and Research (NISER)	
UBucharest Bucharest ELTE Budapest ELTE Budapest ELTE Budapest ELTE Budapest ELTE Budapest Control Chandigarh Chongqing Chandigarh Chongqing Chandigarh Chongqing Chandigarh Cha	Germany	FULL		Institut für Experimentalphysik I, Ruhr-Universität Bochum
ELTE Budapest Wigner ICP Budapest ECTP Cairo UPanjub Chandigarh UChongqing Chongeng USilesia Chorzów FAIR Darmstadt GSI Darmstadt GSI Darmstadt ISF-TUP Darmstadt FIAS Frankfurt IBF-UFFa Frankfurt IBF-UFFa Frankfurt IBF-UFFa Frankfurt UGauhati Guwahati UGauhati Guwahati USTC Hefel PI-UHd Heidelberg UHiroshima Hiroshima IIT-I Indore UHiroshima Hiroshima UHiroshima Hiroshima UHiroshima Hiroshima UHiroshima Hiroshima UHiroshima Hiroshima UHiroshima Hiroshima UHiroshima Hiroshima UHiroshima Hiroshima UHiroshima ania	FULL		Horia Hulubei National Institute of Physics and Nuclear Engineering (IFIN-HH)	
Wigner ICP Budapest CECTP Cairo Color Chandigarh Chonaging Chonagi	Romania	FULL	27.02.2008	Atomic and Nuclear Physics Department, University of Bucharest
ECTP Cairo Upanjab Chandigarh Uchongqing Chongqing Chongqing Silesial Chorzów FAIR Darmstadt GSI Darmstadt GSI Darmstadt FAIR Darmstadt FAIR Darmstadt FAIR Darmstadt FAIR Paraffurt IRI-UFTa Frankfurt IRI-UFTa Frankfurt IRI-UFTa Frankfurt UGashati Guwahati USTC Hefel PI-UHd Heidelberg UJahati Guwahati USTC Hefel UJammu Jammu ISTC UHIroshima Hiroshima IIT-1 Indore UHiroshima Hiroshima IIT-1 Indore UJammu Jammu KAT Kafsuhe IIT-1 Kafsuhe UJammu Jammu KAT Kafsuhe UJammu Jammu KAT Kafsuhe UJammu Jammu KAT Kafsuhe UHIROSHIMA UHIR	Hungary	FULL	13.02.2004	Eötvös Loránd University (ELTE)
UPanjab Chandigarh UPanjab Chandigarh USilesia Chongging USilesia Darmstadt GSI Darmstadt GSI Darmstadt IRP-UPA Frankfurt IRP-UFA Frankfurt UGiessen GleiBen UGiessen GleiBen USTC Hefel P-UHd Heidelberg ZITI-UHd Heidelberg ZITI-UHd Heidelberg ZITI-UHG Heidelberg IIIT-I Indore UZammu XIT XIT Karlsruhe Bose Kölkata VECC Kolkata VECC Kolkata VEC Kolkata VEC Kolkata VEC Kolkata UJagleolian Kraków UJagleolian Monbat UMalmat Monbat UMalmat Monbat UMalmat Monbat TUM Munch<	Hungary	FULL	13.02.2004	Institute for Particle and Nuclear Physics, HUN-REN Wigner RCP
UChongoing Chongoing Visiblesia Chorrów FAIR Darmstadt GSI Darmstadt GSI Darmstadt FAIS Frankfurt IRI-UFD Frankfurt IRI-UFD Frankfurt IRI-UFD Frankfurt IRI-UFD Frankfurt IRI-UFD Frankfurt IRI-UFD Frankfurt UGashati Guwahati UGashati Guwahati USTC Hefel PI-UHd Heidelberg UTI-UFD Frankfurt IRI-UFD Fra	Egypt	ASSO	14.04.2016	Egyptian Center for Theoretical Physics at Nile University (ECTP)
USilesia Chorzów FAR Darmstadt GSI Darmstadt GSI Darmstadt IKP-TUD Darmstadt FIAS Frankfurt IRI-UFFa Frankfurt IBI-UFFa Frankfurt UGiessen Gielen UGauhati Gwwahati USTC Hefel Hery Hefel UGauhati Gwwahati USTC Hefel UGauhati Indore UIJammu Jammu KIT Karlsruhe UIJammu Jammu KIT Karlsruhe Dose Kölkata VECC Kolkata VECC Kolkata VEC Kolkata MGH Lanchou UMalma Munbat IIT-B Munbat UMalma Munbat IIT-B Munbat IIT-B Munbat IIT-B Munbat IIT	India	FULL	21.09.2006	Department of Physics, Panjab University
USilesia Chorzów FAR Darmstadt GSI Darmstadt GSI Darmstadt IKP-TUD Darmstadt FIAS Frankfurt IRI-UFFa Frankfurt IBI-UFFa Frankfurt UGiessen Gielen UGauhati Gwwahati USTC Hefel Hery Hefel UGauhati Gwwahati USTC Hefel UGauhati Indore UIJammu Jammu KIT Karlsruhe UIJammu Jammu KIT Karlsruhe Dose Kölkata VECC Kolkata VECC Kolkata VEC Kolkata MGH Lanchou UMalma Munbat IIT-B Munbat UMalma Munbat IIT-B Munbat IIT-B Munbat IIT-B Munbat IIT	China	FULL	27.09.2017	Chongqing University
GSI Darmstadt IRP-TUD Darmstadt FIAS Frankfurt FIAS Frankfurt RI-UFra Frankfurt RI-UFra Frankfurt UGiessen Gießen UGauhati Guwahati USTC Hefel USTC Hefel ZITI-UHd Heidelberg ZITI-UHd Heidelberg ZITI-UHd Heidelberg ZITI-UHG Harman IIT-I Indore UIammu Jammu KIT Karfsruhe RIT-KEP Kharagpur Bose Kolkata VECC Kolkata VECC Kolkata VECC Kolkata VECC Kolkata VECC Kolkata VECC Kolkata VECC Kolkata VECC Kolkata VECC Kolkata VECC Kolkata VECC KOLKATA VEC	Poland	ASSO	13.02.2004	Institute of Physics, University of Silesia
IKP-TUD Dermstadt IKP-UPD Personal Transfurt IKF-UFra Frankfurt IKF-UFra Frankfurt IKF-UFra Frankfurt IKF-UFra Frankfurt IKF-UFra Frankfurt IKF-UFra Frankfurt IKF-UFra Frankfurt IKF-UFrankfurt IKF-UFRA	Germany	FULL		Facility for Antiproton and Ion Research in Europe GmbH (FAIR)
FIAS Frankfurt IRI-UFF2 Frankfurt IRI-UFF2 Frankfurt IRI-UFF2 Frankfurt UGessen Gießen UGauhati Guwahati USTC Hefel P-Uhd Heddelberg ZITI-UHd Heddelberg ZITI-UHd Heddelberg ZITI-UHd Heddelberg XIT Karlsruhe IIT-I Indore UJammu Jammu XIT Karlsruhe IIT-G Kharagpur KIT Karlsruhe UIAMMU XIT Karlsruhe UIAMMU XIT Karlsruhe UIAMMU XIT Karlsruhe UIAMMU XIT Karlsruhe UIAMMU XIT Karlsruhe UIAMMU XIT Karlsruhe UIAMMU XIT Karlsruhe UIAMMU XIT KARLOW UIAMMU XIT KARLOW UIAMMU XIT Mumbai IIT-B Mu	Germany	FULL	13.02.2004	GSI Helmholtzzentrum für Schwerionenforschung GmbH (GSI)
FIAS Frankfurt IRI-UFF2 Frankfurt IRI-UFF2 Frankfurt IRI-UFF2 Frankfurt UGessen Gießen UGauhati Guwahati USTC Hefel P-Uhd Heddelberg ZITI-UHd Heddelberg ZITI-UHd Heddelberg ZITI-UHd Heddelberg XIT Karlsruhe IIT-I Indore UJammu Jammu XIT Karlsruhe IIT-G Kharagpur KIT Karlsruhe UIAMMU XIT Karlsruhe UIAMMU XIT Karlsruhe UIAMMU XIT Karlsruhe UIAMMU XIT Karlsruhe UIAMMU XIT Karlsruhe UIAMMU XIT Karlsruhe UIAMMU XIT Karlsruhe UIAMMU XIT KARLOW UIAMMU XIT KARLOW UIAMMU XIT Mumbai IIT-B Mu	Germany	FULL		Institut für Kernphysik, Technische Universität Darmstadt
IKT-UFra Frankfurt UGiessen Gießen UGauhati Guwahati USTC Hel USTC Hel Pr-UHd Heidelberg ZIT-UHd Heidelberg UHiroshima Hiroshima IIT-I Indore UJammu Jammu KITF UJammu Jammu KITF KIT Kafsruhe IIT-KSP Kharagpur USAMU KIT Kafsruh UZalotta Kolkata UZalotta Kolkata UZalotta Kolkata VECC Kolkata AGH Kraków Ujagiellonian Kraków Ujagiello	Germany	FULL		Frankfurt Institute for Advanced Studies, Goethe-Universität Frankfurt (FIAS)
IRI-UFF prankfurt UGashati Gweshati USCC Hefel USCANATI Medelberg ZITI-UHd Heddelberg ZITI-UHd Heddelberg ZITI-UHd Heddelberg ITI-I Indore UJammu Jammu XIT Karfsruhe ITI-I Indore UJammu Jammu XIT Karfsruhe ITI-KDP Kharagpur Bose Kolikata VECC KOLIKATA VECC KOLIKATA VE	Germany	FULL		Institut für Kernphysik, Goethe-Universität Frankfurt
UGiesen Gießen UGashati Gwwahati USTC Hefel PI-UM Hedelberg ZITT-UHA Heidelberg UHiroshima Hiroshima III-1 Indore UJammu Jammu KXT Kafsruhe III-1 Sose Kolkata UCalcutta Kolkata VECC Kolkata UCalcutta Kolkata VECC Kolkata UCalcutta Kolkata VECC Kolkata UCalcutta Kolkata VECC Kolkata UCalcutta Kolkata VECC Kolkata UCalcutta Kolkata VECC Kolkata UCalcutta Kolkata UCalcutta Kolkata VECC Kolkata UCalcutta Kolkata VECC Kolkata UCalcutta Kolkata VECC Kolkata UCalcutta Kolkata VECC Kolkata UCalcutta Kolkata VECC Kolkata AGH Kraków URajelmol Monster III-B Mumbai III-	Germany	FULL		Institute for Computer Science, Goethe-Universität Frankfurt
UGauhati Guwahati USTC Hefel Pk-UHd Heidelberg ZIT1-UHd Heidelberg ZIT1-UHd Heidelberg ZIT1-UHd Heidelberg ZIT1-UHd Heidelberg ZIT1-UHd Heidelberg ZIT1-UHd Heidelberg ZIT1-UHd Heidelberg ZIT1-UHd Heidelberg ZIT1-UHd Heidelberg ZIT1-UHd Klarberg ZiT1-UHd Klarberg ZiT1-UHd Z	Germany	FULL		Justus-Liebig-Universität Gießen
USTC Mefel Pr-UHD Meidelberg ZTT-UHd Meidelberg ZTT-UHd Meidelberg Ulfiroshima Hiroshima III-1 Indore Ulammu Jammu KIT Kafsuhe III-1 Meidelberg Ulammu Jammu KIT Kafsuhe III-1 Meidelberg Ulammu Jammu KIT Kafsuhe III-1 Meidelberg Ulaeluta Kolkata VCCC Kolkata AGH Kraków UCalcutta Kolkata VCCC Kolkata AGH Kraków KINR Kylv TSTNU-Kylv KINP Lanzhou UMalna Mainz UMalna Mainz UMalna Mainz UMalna Mumbai TUM Mumbai TUM Mumbai TUM Mumbai UMalna Killin Minter III-8 Mumbai TUM Mumbai UMalna Killin Ki	India	FULL		Nuclear and Radiation Physics Research Laboratory, Department of Physics, Gauhati University
Pi-Ulid	China	FULL		Department of Modern Physics, University of Science & Technology of China (USTC)
ZITT-UHI Meidelberg Uffiroshima lifroshima III-1 Indore Ulammu Jammu KITT Kafsruhe IIT-KIP Kharagur IIT-KIP Kharagur VECC Kolkata AGH Kraków UZaloutta Kolkata VECC Kolkata AGH Kraków UZaloutta Kolkata VILagellenian Kraków KINR Kyv TSTNU-Kyv TSTNU-Kyv IMP Lanzhou UMainz Mainz UMainz Mainz UMainz Mainz UMaint Monster IIT-B Mumbai TUM Mumbai TUM Mumbai TUM Mumbai UMashim Kraków KINR Kyv TSTNU-Kyv IIT-B Mumbai UMashim Kinster IIT-B Mumbai UMashim Kinster IIT-B Mumbai UMumbai TUM Munich CTU Prague PRU Pusan NPI-CAS Rež NIBU Siliguri UKashimir Srinagar IPHC Strasbourg KEK Taukuba UTuebingen Tolbingen BHU Varansai IE-WUT Warsaw ISE-WUT Warsaw ISE-WUT Warsaw ISE-WUT Warsaw	Germany	FULL		Physikalisches Institut, Universität Heidelberg
UHIroshima Hiroshima IIIT-I Indore UJammu Jammu Kit Karfaruhe IIIT-KIP Karfaruhe Bose Kolkata UECC Kolkata VECC KOLkata VECC KOLkata VEVI Willia UKashmir Senagar UFU Prasu VECC Strasbourg EFC Str		FULL		
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UJammu Jammu VATEVIT Karfaruhe IIT-KGP Kharagpur Bose Kolkata VECC Kolkata VECC Kolkata VECC Kolkata VECC Kolkata VECC Kolkata VECC Kolkata VECC Kolkata Kylv TSNU-Kylv Kylv IMP Lanthou UMainz Mainz UMuenster Mumbai TUM Munich CTU Prague PNU Pusan NP-CAS Rež NSIU Siliguri UKashmir Srinagar PNC Strasbourg KEK Taskuba TCHOU Tsukuba TCHOU Tsukuba BHU Varansai BHU Varansai IS-WUT Warsaw Varsaw Varnaw Varnaw Varnaw Varnaw Varnaw Varsaw Varsaw Varnaw Va	India			Indian Institute of Technology Indore
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Bose Kolkata VECC Kolkata VECC Kolkata VECC Kolkata VECC Kolkata VECC Kolkata VECC Kolkata AGH Kraków KINR Kyv ISTNU-Kyv IMP Lanzhou UMeinster Münster UMeinster Münster TUM Munich CTU Prague PNU Pusan NPI-CAS Rež NBU Silguri UKashmir Srinagar IPHC Srakóbu TCHOU Tuskuba UTuebingen BHU Varansul UTuebingen BHU Varansul IF-WUT Warsaw ISE-WUT Warsaw ISE-WUT Warsaw INSTEAM	Germany	FULL		Karlsruhe Institute of Technology (KIT)
UCaloutta Kolkata VSCC Kolkata AGH Kraków Ulagiellonian Kraków Ulagiellonian Kraków KINR Kyv TSNU-Kyv Kyv IMP Lanchou UMainz UMainz UMainz HT-B Mumbai TUM Mumbai TUM Mumbai TUM Mumbai TUM Mumbai TUM Mumbai TUM Mumbai TUM Siraków Killy Siraków Killy Siraków TUM Siraków T	India	FULL		Indian Institute of Technology Kharagpur
VECC Kolkata AGH Kraków Lugellonian Kraków KINR Kyv TSNU-Kyv Kyv IMP Lanzhou UMuenster Minster TUM Munich CTU Prague PNU-CA Rež NPI-CA Rež NUM-CTU Prague NPI-CA Rež NUM-CTU Prague NPI-CA Rež NUM-CTU Prague NPI-CA Rež NUM-CTU Prague NPI-CA Rež NUM-CTU Prague NPI-CA Rež NUM-CTU Prague NPI-CA Rež NUM-CTU Prague NUM-CTU UKashmir Śrinagar IPHC Strasbourg KEK Tsukuba UTuebingen IT-GHOU Tuskuba UTuebing	India			Department of Physics, Bose Institute
AGH Knaków Lugajellonian Knaków Lugajellonian Knaków Lugajellonian Knaków Lyv TSNU-kyv Kyv TSNU-kyv Kyv Lugajellonian Mimp Lanzhou UMainz UMainz UMainz UMainz UMainz HiT-B Mumbai TUM Mumbai TUM Mumbai TUM Prague PRU Pusan NPI-CAS Rež NBIU Siliguri UKashmir Srinagar UKashmir	India	FULL		Department of Physics and Department of Electronic Science, University of Calcutta
UJagellonian Kraków XINN Kyv TSNU-Kylv MY TSNU-Kylv MP Lanchou UMainz UMainz UMainz UMainz UMainz UMainz UMainz UMainz UMainz Minnster IIT-8	India	FULL		Variable Energy Cyclotron Centre (VECC)
XINR Kyw IXINE Kyw IMP Lanthou UMainz UMainz UMuenster III-B Mumbai IT	Poland	FULL		AGH University of Science and Technology (AGH)
TSNU-Nyk Kyk IMP Lanchou UMainz Mainz UMainz Minser IIT-B Mumbai TUM Mumbai TUM Prague PNU Prague NP-CAS Rez NBU Siliguri IPHC Strasbourg IPHC	Poland	FULL		Marian Smoluchowski Institute of Physics, Jagiellonian University
IMP Lanshou UMainz UMuenster UMuenster Münster IIT-B Mumbai TUM Munich CTU Prague PNU Pusan NPI-CAS Rež NBIU Siliguri UKashmir Srinagar IPIHC Strasbourg KEK Tsukuba UTuebingen TCHOU Tsukuba UTuebingen BHU Varansul ISE-WUT Warsaw USarsaw	Ukraine	FULL		High Energy Physics Department, Kiev Institute for Nuclear Research (KINR)
UMainz Mainz UMaenster Münster IIT-8 Münster	Ukraine	FULL	13.02.2004	Department of Nuclear Physics, Taras Shevchenko National University of Kylv
UMuenster Münster TUM Munich TUM Munich CTU Prague PNU Pusan NPI-CAS Rež NIBU Silguri UKashmir Srinagar IPHC Strasbourg KEK Tsukuba UTuebingen TUHU Varansul IF-WUT Warsaw ISE-WUT Warsaw UMarsaw UMarsaw UMarsaw	China	ASSO	01.10.2019	Institute of Modern Physics, Chinese Academy of Sciences (IMP)
IIT-B Mumbai TUM Munich CTU Prague PNU Pusan NPI-CAS Rež NBU Siliguri NBU Siliguri NBU Siliguri NBU Siliguri NBU Siliguri NBU Siliguri NBU Siliguri NBU Siliguri NBU Siliguri NBU Varansai IF-WUT Warsaw ISE-WUT Warsaw Marsaw	Germany	ASSO	30.09.2021	Institut für Physik, Johannes Gutenberg-Universität Mainz
TUM Munich CTU Prague PPLQ Pusan NPLCAS Rež NPLCAS Rež UKShmiri Srinagar IJEV UKsabmiri KEK Tsukuba UTuebingen Tübingen BHU Varanasi IE-WUT Warsaw ISE-WUT Warsaw Varsaw Varsaw	Germany	FULL	13.02.2004	Institut für Kernphysik, Universität Münster
CTU Prague PPNU Pusan NPI-CAS Rež NBU Siliguri Uksahmir Srinagar IPHC Strasbourg KEK Tsukuba UTuebingen Tübingen Tübingen HBHU Varsaw IF-WUT Warsaw ISE-WUT Warsaw Warsaw Warsaw Warsaw Warsaw Warsaw PNU PNU PNU PNU PNU PNU PNU PNU PNU PNU	India	ASSO	14.04.2016	Indian Institute of Technology Bombay
PNU Pusan NPI-CAS Rez NBU Siliguri UKashmir Srinagar IPHC Strasbourg KEK Tsukuba TCHOU Tsukuba UTuebingen Tübingen BHU Varanasi IF-WUT Warsaw UWarsaw UWarsaw	Germany	ASSO	04.04.2019	TUM School of Natural Sciences, Department of Physics, Technical University of Munich (TUM)
NPI-CAS Rež NBU Siliguri Ukashmir Srinagar IPHC Strasbourg KEK Tsukuba TCHOU Tsukuba UTuebingen Tübingen BHU Varanasi IF-WUT Warsaw USE-WUT Warsaw UWarsaw Warsaw Warsaw	Czech Republic	FULL	13.02.2004	Czech Technical University in Prague (CTU)
NBU Siliguri UKashmir Srinagar IPHC Strasbourg KEK Tsukuba TCHOU Tsukuba UTuebingen Tübingen BHU Varanasi IF-WUT Warsaw ISE-WUT Warsaw UWarsaw	Korea	FULL	13.02.2004	Pusan National University (PNU)
UKashmir Srinagar IPHC Strasbourg KEK Tsukuba TCHoU Tsukuba UTuebingen Tübingen BHU Varanasi IF-WUT Warsaw ISE-WUT Warsaw UWarsaw Warsaw	Czech Republic	FULL	13.02.2004	Nuclear Physics Institute of the Czech Academy of Sciences
UKashmir Srinagar IPHC Strasbourg KEK Tsukuba TCHoU Tsukuba UTuebingen Tübingen BHU Varanasi IF-WUT Warsaw ISE-WUT Warsaw UWarsaw Warsaw	India	ASSO		Department of Physics, Faculty of Science, University of North Bengal
IPHC Strasbourg KEK Tsukuba TCHOU Tsukuba UTuebingen Tübingen BHU Varanasi IF-WUT Warsaw UWarsaw UWarsaw UWarsaw Warsaw	India	FULL		Department of Physics, University of Kashmir
KEK Tsukuba TCHoU Tsukuba UTuebingen Tübingen BHU Varanasi IF-WUT Warsaw ISE-WUT Warsaw UWarsaw Warsaw	France			Institut Pluridisciplinaire Hubert Curien (IPHC), IN2P3-CNRS and Université de Strasbourg
TCHOU Tsukuba UTuebingen Tübingen BHU Varanasi IF-WUT Warsaw UWarsaw Warsaw UWarsaw Warsaw	Japan			High Energy Accelerator Research Organization (KEK)
UTuebingen Tübingen BHU Varanasi IF-WUT Warsaw ISE-WUT Warsaw UWarsaw Warsaw	Japan			Tomonaga Center for the History of the Universe, University of Tsukuba (TCHoU)
BHU Varanasi IF-WUT Warsaw ISE-WUT Warsaw UWarsaw Warsaw	Germany			Physikalisches Institut, Eberhard Karls Universität Tübingen
IF-WUT Warsaw ISE-WUT Warsaw UWarsaw Warsaw	India	FULL		Department of Physics, Banaras Hindu University (BHU)
ISE-WUT Warsaw UWarsaw Warsaw	Poland	FULL		Faculty of Physics, Warsaw University of Technology
UWarsaw Warsaw	Poland	FULL		Institute of Electronic Systems, Warsaw University of Technology
	Poland			
		FULL		Faculty of Physics, University of Warsaw College of Physical Science and Technology, Control China Normal Habrardty (CCNIII)
CCNU Wuhan	China	FULL		College of Physical Science and Technology, Central China Normal University (CCNU)
UWuppertal Wuppertal CTGU Yichang	Germany China	FULL		Fakultät für Mathematik und Naturwissenschaften, Bergische Universität Wuppertal College of Science, China Three Gorges University (CTGU)

The Member Institutions of the CBM Collaboration are indicated with "FULL" in this list, whereas Associated Members Institutions are marked with "ASSO".

Annex 2 of the C-MoU with list of the Funding Agencies involved in the funding of the CBM experiment is updated as follows:

Country	Funding agency
China	Central China Normal University (CCNU)
China	Tsinghua University (THU)
China	University of Science & Technology (USTC)
Czech Republic	Ministry of Education, Youth and Sports (MSMT)
Germany	Bundesministerium für Bildung und Forschung (BMBF)
Germany	GSI Helmholtzzentrum GmbH
Hungary	HUN-REN WIGNER Research Center for Physics
India	Department of Science & Technology (DST)
Korea	Pusan National University
Poland	Ministry of Science and Higher Education
Romania	Atomic Physics Institute (AFI) for Ministry of Research, Innovation and Digitalization (MCID)
Ukraine	NASU / State Agency of Ukraine

The latest and valid version of the list of the Funding Agencies is archived at https://edms.cern.ch/document/xxxxxxxxx.

Updated Annex 3 (Organization rules of the CBM Collaboration):

The **Organization rules of the CBM Collaboration** and Management structure of the CBM Collaboration are given in **Annex 3** of the CBM C-MoU. The CBM collaboration has updated its "CBM Organization Rules" since 2020 several times.

The latest and valid version of the "CBM Organization Rules" (Annex 3) is part of this amendment to the CBM C-MoU and archived at https://edms.cem.ch/document/3071438/LAST_RELEASED.



Changes in the Annexes of the C-MoU

Updated Annex 4: Summary Tables on Construction Cost and Funding

In Annex 4b of the C-MoU the Summary Tables on Construction Cost and Funding with the Values of Commitments by Funding Agency to the CBM Detectors/Subsystems as presented at the 9th Resource Review Board (RRB) in November 2019 and updated according to comments after the RRB9 from Funding Agencies and of the ECSG are given.

Annex 4b to the C-MoU with the contributions of the institutes and countries to the construction costs of the CBM experiment is updated with the following funding tables as presented in the 12th RRB meeting on 06.06.2023:

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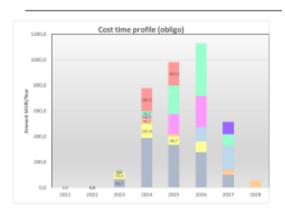
Changes in the Annexes of the C-MoU

Updated Annex 8 (Procedures for the Construction Common Fund for the Common Infrastructure):

The Procedures for the Construction Common Fund and the costs and spending profile of the Common Infrastructure Costs are defined in Annex 8 of the CBM C-MoU.

The cost and spending profile for the CBM Common (cave) Infrastructure procurements in Annex 8 of the CBM C-MoU is updated with the new spending profile as presented in 2023 to the RRB and to the ECE/ECSG. Since the completion of the CBM cave was delayed, planned procurements for the CBM infrastructure as originally defined in the C-MoU for 2020 and 2021 are shifted as given below.

updated (2023) spending profile for CBN



*(C-MoU: 3,23 M€ (2019 prices) - escalated amo

		2021	2022	2023	2024	20
Machaninal sinurtures	1108,0	0,0	0,0	66,7	380,0	338
E10 equipment etc.	313,4	0.0	0.0	55,6	107,8	66
E40 equipment	158,9	0,0	0,0	0,0	46,7	16
Gas infrastructure	300,5	0,0	0,0	0,0	0,0	0
Racks	417,0	0,0	0,0	0,0	16,7	156
Data transfer infrastructure	761,4	0,0	0,0	0,0	36,7	224
Beam transfer infrastructure	365,6	0.0	0.0	0.0	182,3	183
Beam dumps	94,5	0,0	0.0	0,0	0.0	- 0
	3580,0	0.0	0,0	122,3	779,1	982

Work Package	Price	2021	2022	2023	2024	2025	2026	2027	2028			
Rail System - Rails	329,5			55,6	222,3	51,7						
Rail System - Subframes	222,3				55,6	55,6	111,1					
Ups tream Platform - Concrete	300,1			11,1	111,1	177,8				Mechanical structures	1168,6	
Upstream platform - Cryo platform	116,7					50,0	66,7					
RICH-MUCH foundation	200,0					0,0	100,0	100,0				
Survey tools	83,4				55,6	27,8						
Tools, scaffolding, hoisting gear	216,7			55,6	38,9	38,9	83,4					
Safety gear	13,3				13,3	0,0						
Control room	95,6					0,0		40,0	55,6			
Preparation area (E40)	46,7				46,7	0,0				E40 equipment	158,9	
Gas container (E40)	16,7					16,7						
Gas alarm system (E30/E40)	44,5					0,0	22,2	22,2				
Gas lines (E40-E30)	97,7					0,0	33,3	64,3		Gas infrastructure	300,5	
Gas lines (E30-E10)	158,4					0,0	55,6	102,8				
Racks E40	328,0					111,1	216,8					
Racks E30	38,3					11,1	27,2			Racks	417,0	
Racks E10	50,7				16,7	34,0						
Cable trays	31,1				8,9	22,2						
Cooling water distribution	76,9				27,8	49,1				Data transfer		
Optical fibers (E10-E40)	469.7					136,3	333.4			Infrastructure	761,4	
Optical fibers (E40-IT)	133,7					0,0	44,5	89,2		III I a su ucture		
Control system back end	50,0					16,7	33,3					
Target Box+Holder	77,8				38,9	38,9						
Beam pipes	77,8				38,9	38,9				Beam transfer		
Vacuum pumps 87					43,3	44,5				infrastructure	365,6	
Beam diagnosis box	33,3				16,7	16,7				mnastructure		
Beam abort system	88,9				44,5	44,5						
CBM beam dump (rest)	38,9							38,9		Beam dumps	94,5	
HADES beam dump	55,6							55,6		beam oumps	94,5	
Sum	3580,0	0.0	0.0	122,3	779,1	982,4	1127.6	513.1	55.6			

There is the need to compensate for the missing financial contributions from Russian institutes to the CBM Common Fund (0,711 MEuro) and for the cost increase by inflation of 0,349 MEuro amounting to 1,06 MEuro. This requires additional contributions to the CBM Common Fund, which have to be collected to cover the expenses for the procurement of the CBM infrastructure items. For the determination of the cost increase of the infrastructure costs, the official FAIR inflation escalation factor of 1,635 between 2005 and 2023 prices was used.



Changes in the Annexes of the C-MoU

To Annex 8 of the C-MoU the following formulation regarding the CBM Common Fund is added: "It is agreed to collect the annual due amount for the Common Fund of 2810 EURO per PhD-holder also in the years 2025 and 2026 from the full member institutes of the CBM collaboration in order to cover the expenses for the CBM Common Infrastructure."

The CBM Collaboration Board has endorsed this procedure at its Collaboration Board Meeting on 27.09.2023.

The table below with the due amounts for the CBM full member institutions in the years 2025 and 2026 (as of 06.12.2023) is added to the Breakdown of the annual contributions to the CBM Construction Common Fund in the C-MoU for the years 2020-2024.

				phd	D+P%	due amount per PhD	due amount per PhD holder	sum 2025 & 2026		
Institute	City	Country	all	students D+P (PhD holder)		holder (2810€) in 2025	(2810€) in 2026		per country [EURO]	
THU	Beijing	China	5	1 4	2,1%					
JChongqing	Chongging	China	3	0 2						
JSTC	Hefei	China	6	2 2						
CCNU	Wuhan	China	7	0 7						
CTGU	Yichang	China	4	0 4	0,070					
CTU	Prague	Czech	5	1 3						
NPI-CAS	Řež	Czech	3	2 1						
ZIB	Berlin	Germany	2	0 2						
RUB	Bochum	Germany	8	1 7						
FAIR	Darmstadt	Germany	10	0 9						
GSI			63	6 45						
SSI KP-TUD	Darmstadt	Germany	4	3 1						
HZDR	Darmstadt	Germany	4	3 1	0,5%					
	Dresden	Germany	- 40		0,0%					
FIAS	Frankfurt	Germany	13	6 6						
IKF-UFra	Frankfurt	Germany	17	9 8						
IRI-UFra	Frankfurt	Germany	7	3 1	0,5%					
UGiessen	Gießen	Germany		3 2						
PI-UHd	Heidelberg	Germany	6	2 3						
ZITI-UHd	Heidelberg	Germany	1	0 1	0,5%					
KIT	Karlsruhe	Germany	8	1 4						
UMuenster	Münster	Germany	13	5 3						
UTuebingen	Tübingen	Germany	3	2 1	0,5%					
UWuppertal	Wuppertal	Germany	10	4 4	2,170					
ELTE	Budapest	Hungary	1	0 1	0,5%					
WignerRCP	Budapest	Hungary	1	0 1	0,5%					
AMU	Aligarh	India	5	2 3						
IOPB	Bhubaneswar		3	0 2						
NISER	Bhubaneswar	India	3	0 3						
UPanjab	Chandigarh	India	1	0 1	0,5%					
UGauhati	Guwahati	India	1	0 1	0,5%					
IIT-I	Indore	India	3	0 3						
UJammu	Jammu	India	4	0 2	1,0%	5.620 €	5.620 €	11.240 €		
IIT-KGP	Kharagpur	India	1	0 1	0,5%	2.810 €	2.810 €	5.620 €		
Bose	Kolkata	India	11	3 8	4,2%	22.480 €				
UCalcutta	Kolkata	India	3	0 3	1,6%	8.430 €	8.430 €	16.860 €		
VECC	Kolkata	India	11	5 6		16.860 €	16.860 €	33.720 €		
UKashmir	Srinagar	India	4	0 2	1,0%	5.620 €	5.620 €	11.240 €		
BHU	Varanasi	India	3	1 2	1,0%	5.620 €	5.620 €	11.240 €	207.940 €	
PNU	Pusan	Korea	1	0 1	0,5%		2.810 €	5.620 €	5.620 €	
AGH	Kraków	Poland	5	0 5	2,6%	14.050 €	14.050 €	28.100 €		
UJagiellonian	Kraków	Poland	8	0 6						
										*joined after C-MoU:
IF-WUT	Warsaw	Poland	3	0 3						Amount for 2020-2024 is 42150€
ISE-WUT	Warsaw	Poland	7	2 3	1,6%	8.430 €	8.430 €	16.860 €		
UWarsaw	Warsaw	Poland	2	0 2	1,0%	5.620 €	5.620 €	11.240 €	106.780 €	
FIN-HH	Bucharest	Romania	5	0 4	2,1%	11.240 €	11.240 €	22.480 €		
UBucharest	Bucharest	Romania	6	2 4	2,1%	11.240 €	11.240 €	22.480 €	44.960 €	
KINR	Kyiv	Ukraine	7	4 1	0,5%	2.810 €	2.810 €	5.620 €		
TSNU-Kyiv	Kyiv	Ukraine	4	0 4	2,1%	11.240 €	11.240 €	22.480 €	28.100 €	
-										
sum (all)			305	70 192	100,0%	539.520 €	539.520 €	1.079.040 €	1.079.040 €	

ECE/ECSG recommendations regarding Amendment to CBM C-Mou



ECE/ECSG November 2023:

Executive Summary on Addendum of the MoU construction

A revised memorandum of understanding (MoU) for the CBM construction and common fund was
introduced, necessitated by the cancellation of the Russian in-kind contribution matrix and to offset
the shortfall from the financial contributions of Russian teams to the common construction fund. We
advise that the current draft of the MoU Addendum be submitted to the Resource Review Board
(RRB) for consideration.

ECE/ECSG April 2024:

Executive Summary

The collaboration presented an amendment to the construction Memorandum of Understanding (C-MOU) to address the shortfall of €0.7 million in contributions from Russian institutes, as well as an additional €0.3 million due to cost escalation from increased construction time and inflation. They propose extending the C-MOU payments for an additional two years, aligning with the postponed start of exploitation and the corresponding Maintenance & Operations Memorandum of Understanding (M&O MOU), thus covering the financial shortfall. The committees consider this an appropriate and equitable proposal and recommend its approval.

ATLAS COLLABORATION - MoU for M&O

CERN-RRB-2002-035

Memorandum of Understanding

for Maintenance and Operation of the ATLAS Detector

between

The EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH hereinafter referred to as CERN, Geneva, as the Host Laboratory

on the one hand

and

a Funding Agency/Institution of the ATLAS Collaboration

on the other hand.

ALICE COLLABORATION - MoU for M&O

CERN-RRB-2002-034

Memorandum of Understanding

for Maintenance and Operation of the ALICE Detector

between

The EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH, hereinafter referred to as CERN, Geneva, as the Host Laboratory

on the one hand

and

a Funding Agency/Institution of the ALICE Collaboration

on the other hand.

Article 6: Responsibilities of the Institutes for the Maintenance and Operation of the ALICE Detector, and of CERN as Host Laboratory

6.1 Responsibility for the M&O of the ALICE detector rests jointly with the Collaboration as a whole and with CERN as Host Laboratory, within the General Conditions for Experiments Performed at CERN.

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.**

6.2 It is also a fundamental principle that an Institute, which has contributed a component of

equipment, will also contribute to the necessary scientific and technical manpower support to

operate that component and maintain it in good working order.

Article 7: Maintenance and Operation Categories

7.1 The M&O expenses can be divided into the following three categories :

7.1.1 Category A. M&O expenses that are shared by the entire Collaboration (cf. Article 6.3.1 above). Annex 9 lists the headings under which Category A costs are categorised.

7.1.2 Category B. M&O expenses that are borne by part of the Collaboration, i.e. by single Institutes or groups of Institutes, and their Funding Agencies (cf. Article 6.3.2 above). The headings in this category are defined with

reference to the distribution of responsibilities amongst the various Institutes for the construction of the ATLAS Detector as given in Annex 8. **Annex 10** lists the headings under which Category B costs are categorised and the Institutes concerned.

It is agreed that an Institute having responsibility under a Category B heading will contribute to providing the necessary financial, scientific and technical support, as well as replacement or spare parts, for normal operation of that equipment and for the routine maintenance needed to keep it in good working order. If problems arise that require major modifications, responsibility will lie with the Collaboration as a whole. The Collaboration will propose on a case-by-case basis the events to which this provision will apply. The proposal will be submitted for approval to the next RRB meeting, which will also be asked to approve the provision of the necessary resources.

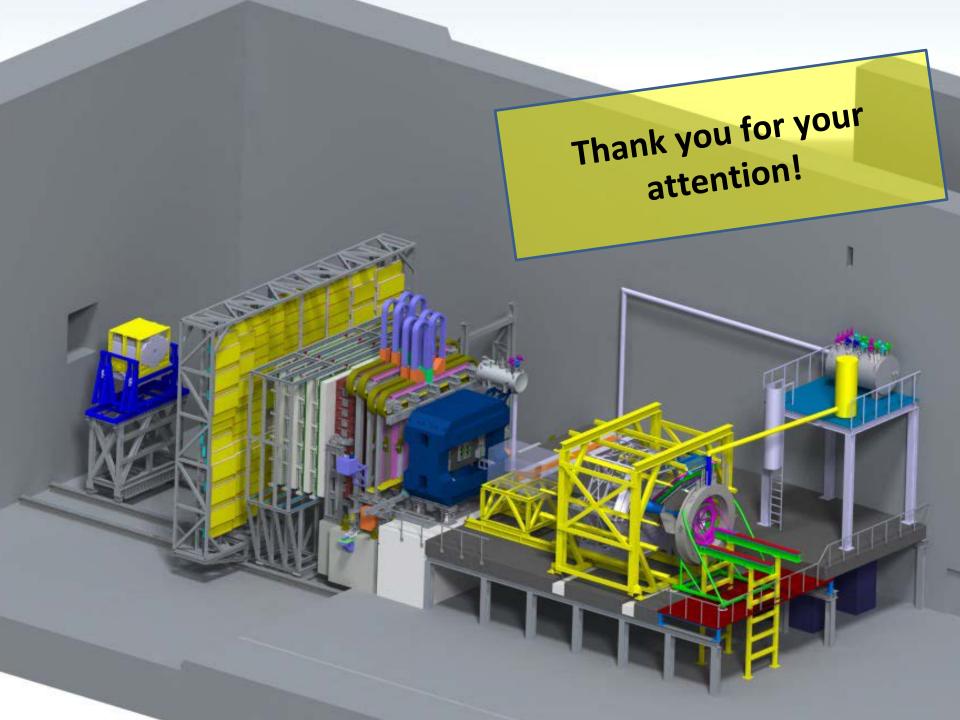
7.1.3 Category C. General maintenance and operation expenses that are provided to the Collaboration by CERN, acting in its role as Host Laboratory. Subject to the General Conditions for Experiments Performed at CERN (Annex 3), these are more precisely described in the list given in Annex 11.

CBM has started to discuss the M&O MoU and will present a first draft at one of next CBM RRB meetings

CBM RRB action item

draft resolution:

"The CBM RRB has no objections to proceed with the signing of the presented draft of the Amendment to the CBM Construction MoU by the funding agencies and the CBM member institutes."



CBM Construction Team Accounts

CBM Construction Team Accounts are set up at FAIR GmbH with the same principle as the CBM Common Fund **Purpose**:

- CBM Construction Team Accounts are needed in the construction/installation phase.
- Visiting teams of the CBM member institutes need to be able to withdraw items from the GSI stores, or to purchase equipment via the GSI/FAIR procurement department.
- The purchased items become part of the CBM experiment (with PSP code) and are owned by FAIR GmbH

Status:

Until now CBM Construction Team Accounts for several CBM member institutes have been established at FAIR GmbH. The following CBM groups have opened CBM Construction Team Account and transferred Several hundred thousand EUR to FAIR GmbH, which are available for procurements:

Goethe Universität Frankfurt, IKF, AG C. Blume
Goethe Universität Frankfurt, IKF, AG J. Stroth
Goethe Universität Frankfurt, IRI, AG U. Kebschull
Justus-Liebig-Universität Gießen, II. Physikalisches Institut, AG C. Höhne
Institute for Particle and Nuclear Physics **Wigner** RCP, Budapest G. Wolf
EKUT Universität Tübingen, Physikalisches Institut, AG H.R. Schmidt
Nuclear Physics Institute, Rez, Czech Republic
Universität Heidelberg, PI, AG N. Herrmann

→ procurement for GU Frankfurt on Mimosis Sensor for MVD and for Univ. Tübingen for the STS are done