



# News from the Collaboration Board

Hanna Zbroszczyk for the CBM CB

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*October 24th, 2025, Lanzhou, China*



# Agenda

❖ Wednesday, Oct. 22nd, 2025; 15:00 CST (9:00 CEST)

## Collaboration Board meeting on 46th CBM Week

📅 Wednesday Oct 22, 2025, 3:00 PM → 6:30 PM Asia/Shanghai

📍 ZOOM and at IMP, Lanzhou

👤 Hanna Zbroszczyk (Warsaw University of Technology(WUT))

Description Join Zoom Meeting:

<https://gsi-fair.zoom.us/j/62730098373>

Meeting ID: 627 3009 8373

Passcode: distributed by email to CB members

Registration

🔑 You are registered for this event.

👤 33

Check details

Participants







A Abhijit Bhattacharyya A Andrej Kugler A Anju Bhasin A Ante Bilandzic A Anton Andronic

B Bedangadas Mohanty C Christian Joachim Schmidt C Christian Pauly C Claudia Höhne D David Emschermann

B Bedangadas Mohanty C Christian Joachim Schmidt C Christian Pauly C Claudia Höhne D David Emschermann















# Reports

3:00 PM	→ 3:05 PM	<b>Adoption of the Agenda</b>	🕒 5m	✎
<b>Speaker:</b> Hanna Zbroszczyk (Warsaw University of Technology(WUT))				
3:05 PM	→ 3:10 PM	<b>Minutes of the last meetings</b>	🕒 5m	✎
<b>Speaker:</b> Hanna Zbroszczyk (Warsaw University of Technology(WUT))				
 Minutes_of_the_45t...				
3:10 PM	→ 3:40 PM	<b>Spokesperson Report</b>	🕒 30m	✎
<b>Speaker:</b> Tetyana Galatyuk (TU Darmstadt / GSI)				
 20251022_46CBM_...				
3:40 PM	→ 4:00 PM	<b>Technical Coordinator Report</b> 🔗	🕒 20m	✎
<b>Speaker:</b> Piotr Gasik (GSI/FAIR + TU Darmstadt)				
 gasik_46_CB.pdf				
4:00 PM	→ 4:20 PM	<b>Resource Coordinator Report</b>	🕒 20m	✎
▪ Status preparation CBM M&O MoU				
<b>Speaker:</b> Jürgen Eschke (GSI Helmholtzzentrum für Schwerionenforschung GmbH(GSI))				
 00_FAIR-CBM-M_an...				
 CBM CB 22102025 -...				
 Draft Annexes 10-1...				



# Reports

4:20 PM	→ 4:40 PM	<b>Physics Coordinator Report</b> <b>Speaker:</b> Krzysztof Piasecki (University of Warsaw (UW))  PCreport_48Lanzho...	🕒 20m	 ▾
4:40 PM	→ 5:00 PM	<b>Computing Coordinator Report</b> <b>Speaker:</b> Volker Friese (GSI Helmholtzzentrum für Schwerionenforschung GmbH(GSI))  251022 Report CC.p...	🕒 20m	 ▾
5:00 PM	→ 5:15 PM	<b>Run Coordination Report</b> <b>Speakers:</b> Christian Sturm (GSI Helmholtzzentrum für Schwerionenforschung GmbH(GSI)), David Emschermann (GSI Helmholtzzentrum für Schwerionenforschung GmbH(GSI))  20251022-CB-RUC-...  20251022-CB-RUC-...	🕒 15m	 ▾
5:15 PM	→ 5:25 PM	<b>Report from the Editorial Board</b> <b>Speaker:</b> Hans-Rudolf Schmidt (GSI Helmholtzzentrum für Schwerionenforschung GmbH(GSI))  20251022_ Report E...  20251022_ Report E...	🕒 10m	 ▾
5:25 PM	→ 5:35 PM	<b>Report on CBM Juniors Status</b> <b>Speaker:</b> Pavish Subramani (Bergische Universität Wuppertal(BUW))  ECR_status_CB.pdf	🕒 10m	 ▾



# Reports

## 5:35 PM → 5:55 PM Applications for CBM membership

🕒 20m



- Institute of Modern Physics (IMP), Lanzhou, China – Yapeng P. Zhang (application for full membership)
- Indian Institute of Technology Madras, India - Prabhat R. Pujahari (application for full membership)
- Tohoku University, Japan - Yudai Ichikawa and Kkoji Miwa (application for associate membership)
- IISER-Tirupati, India - Nihar Ranjan Sahoo (application for associate membership)

**Speaker:** Hanna Zbroszczyk (Warsaw University of Technology(WUT))



CBM\_ichikawa\_miw...



CBM\_NiharSahoo.pdf



IITM-CBM-Proposal....



IMP-Full membershi...

## 5:55 PM → 6:00 PM Next Collaboration meetings

🕒 5m



**Speakers:** Hanna Zbroszczyk (Warsaw University of Technology(WUT)), Krzysztof Piasecki (University of Warsaw (UW))



CBM\_48CM\_UW\_Fa...

## 6:00 PM → 6:05 PM AOB

🕒 5m



**Speaker:** Hanna Zbroszczyk (Warsaw University of Technology(WUT))

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## 6:00 PM → 6:05 PM AOB

🕒 5m





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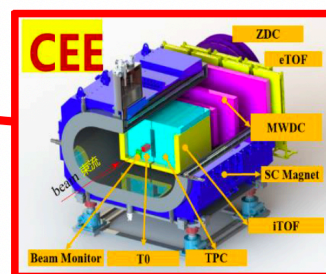
## About IMP

- Founded in 1957, ~1000 staff members and ~500 Master/PhD students
  - National lab of China, responsible for HIRFL and HIAF facilities
  - Nuclear Structure Studies, High-energy Nuclear Physics, Atomic Physics
- Accelerator Physics, Applies Nuclear Physics

Heavy Ion Research Facility in Lanzhou (HIRFL, Lanzhou)



C 1.2 GeV/u  
U 0.5 GeV/u



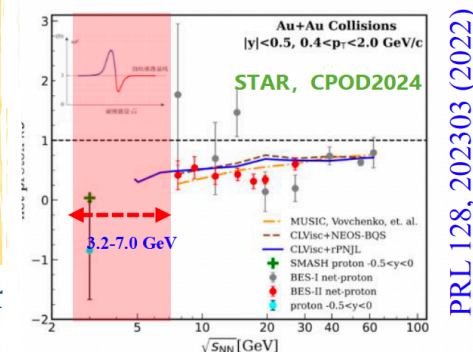
High Intensity Heavy-ion Accelerator Facility (HIAF, Huizhou)



p 9.2 GeV  
C 4.2 GeV/u  
U 2.6 GeV/u

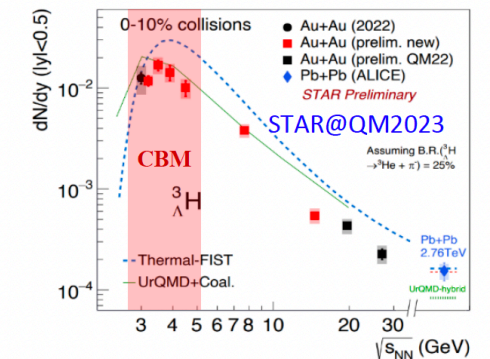
## Physics Interests

### QCD Phase diagram

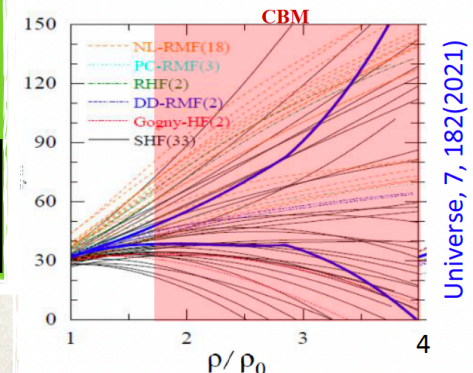


PRL 128, 202303 (2022)

### Hypernuclei & YN interaction

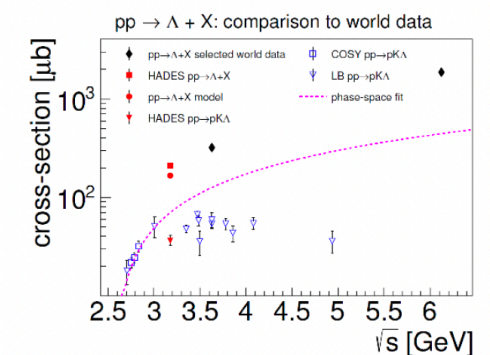


### Equation of States



Universe, 7, 182(2021)

### Hadron Physics





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## Department of Physics at IIT Madras

- Physics department faculty strength currently touched 60, which is maximum among all academic departments of IIT Madras.
- Almost 215+ research scholars are involved actively in research
- A total of 200 graduates and 250 undergraduates are currently present
- Various research domains such as Theory and Experimental High Energy Physics, Gravitation and Cosmology, Quantum Information and Computing, Theory and Experimental Condensed matter and material sciences, etc..
- National and International collaborations such as India-based neutrino observatory (INO), national solar energy program, gravitational wave detection program LIGO, and also collaborations with CERN, EIC, BELLE II, BES III.

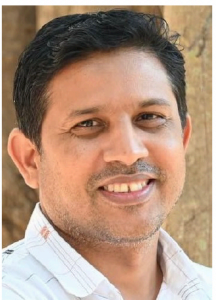


- ▶ Simulation and physics data analysis
  - ☐ Di-lepton invariant mass spectra
  - ☐ Flow fluctuation and correlation
- ▶ CBM instrumentation and detector R & D.
  - ☐ Silicon sensor testing and characterization
  - ☐ Module mechanics and assembly.

## Current activities and team strength

Team members:-

- Prabhat R. Pujahari (Associate Professor)
- Postdoctoral fellow - 2
- Ph.D. students - 8
- Master project students - 2
- Undergrad project students - 3





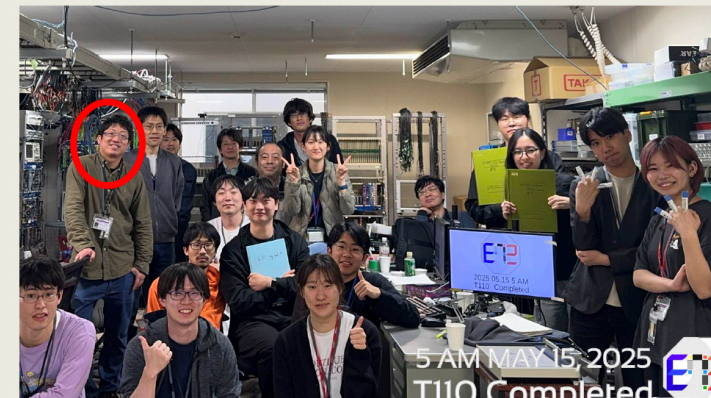
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## Member HypTPC Group

Associate Prof.: Yudai Ichikawa  
Assistant Prof.: Shuhei Hayakawa  
Doctoral Students:  
Fumiya Oura, Ryuta Saito  
Master's Students:  
Koki Amemiya, Kaito Shimazaki,  
Ruri Sasaki, Yusuke Nakayama

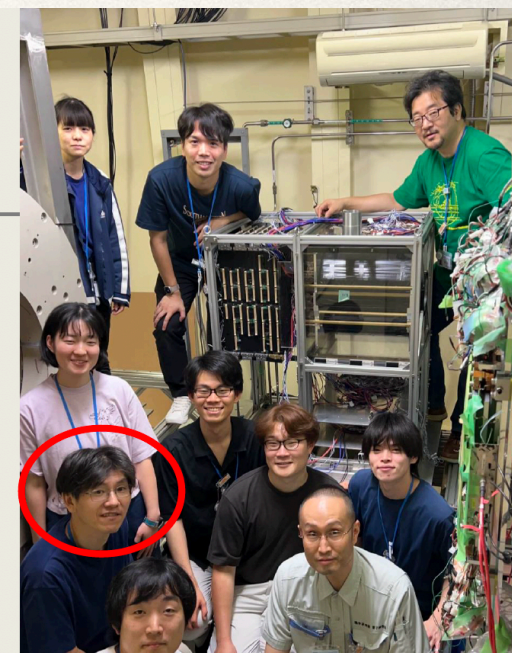


5 AM MAY 15, 2025  
T110 Completed

■ IISER-Tirupati, India - Nihar Ranjan Sahoo (application for associate membership)

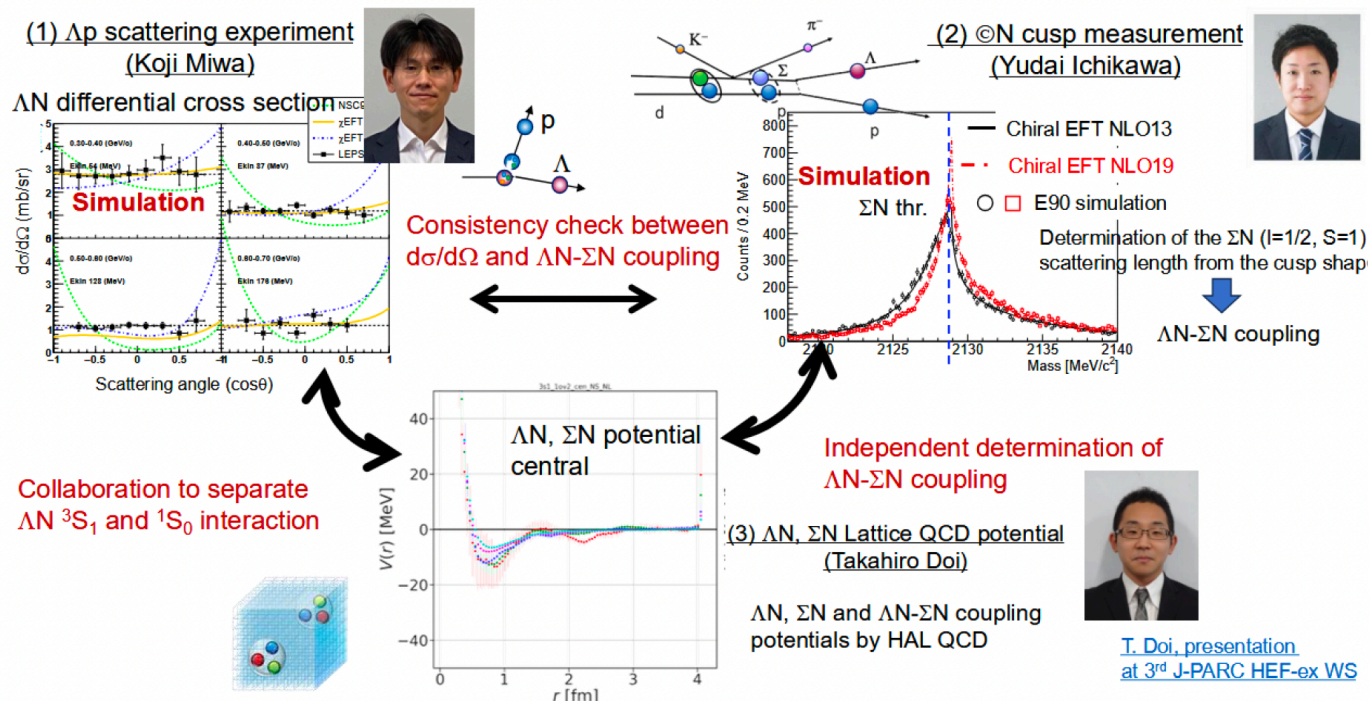
## Member HYPS Group

Professor: Koji Miwa  
Assistant Prof.: Takuya Nanamura  
Doctoral Students: Rintaro Kurata  
Master's Students:  
Akari Haratani, Zen Takano,  
Ryogo Akao, Miyu Yoshida



- ◆ Strengthening collaboration with CBM experiments toward J-PARC(-HI)
  - Possibility to test CBM detectors at J-PARC
- ◆ Contribution to detector development
  - Joint development of neutron counter with Tsukuba group (Esumi)
  - Testing a proton polarimeter (prototype) → potential use in CBM experiments
- ◆ Student exchange through Tohoku University (GPPU program)
  - Doctoral students can stay 1-2 months for CBM activities

## Collaborative research regarding the two-body $\Lambda N$ , $\Sigma N$ int.





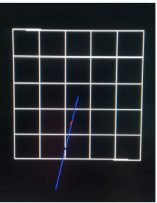
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Currently a small group: 1 PhD + 2 MS-Thesis students

- 1 PhD student: working in the STAR experiment on jet measurement
  - Expecting one more PhD student to join in coming Jan 2026 session
- 2 MS-Thesis students
  1. GEANT4 simulation for silicon detector and related measurements (related to ALICE FoCal project in collaboration with the VECC, Kolkata)
  2. Jet observables in pp collisions
- Coming Summer, I will start working with 1 MS-Thesis student on CBM related work



## Indian Institutes of Science Education and Research (IISER)

Ministry of Education, Government of India

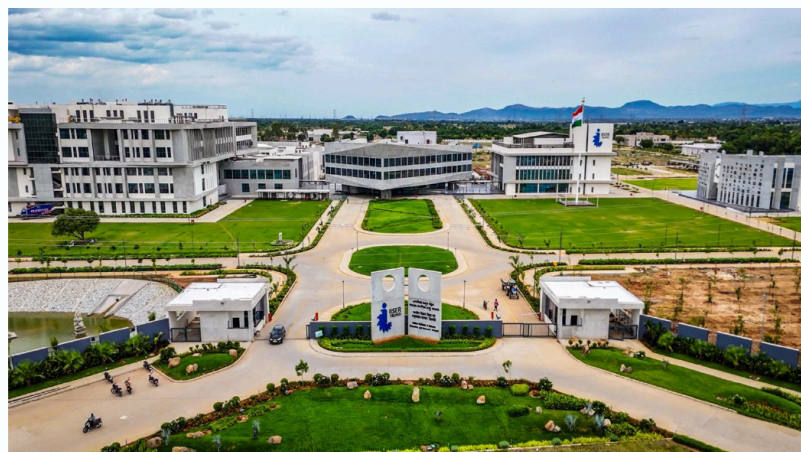
Andhra Pradesh, India

IISER-Tirupati campus



Location of 7 IISERs

wikipedia.org



IISER Tirupati started functioning in the 2015-2016 academic year

**Experimental High Energy Group**

**Nihar Ranjan Sahoo and Chitrasen Jena**

## Possible detector development at the CBM experiment

- Detector and simulation plan:

Utilizing my expertise from the STAR experiment—particularly in  $\gamma/\pi^0$  discrimination techniques using the Barrel Electromagnetic Calorimeter (BEMC) and Shower Maximum Detector (SMD)—my group may plan to contribute to the design and simulation of a calorimeter system (for a potential future detector upgrade) in the CBM experiment, if feasible.

I would be happy to be involved in this discussion...

- Muon Chamber (MuCh) detector
- Other relevant project that can benefit to CBM detector system and computing development

## Physics plan for the CBM experiment

Physics analyses:

- To explore high baryon density physics phenomena using new observables
- To explore physics mainly in the direction of the *strong-CP problem* and *nuclear modification factor* by measuring  $\pi^0$ ,  $\eta$  and  $\eta'$  at collision energies accessible at CBM



# New applications

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IISER-Tirupati - Nihar Ranjan Sahoo

**Congratulations and welcome to the CBM Collaboration!**



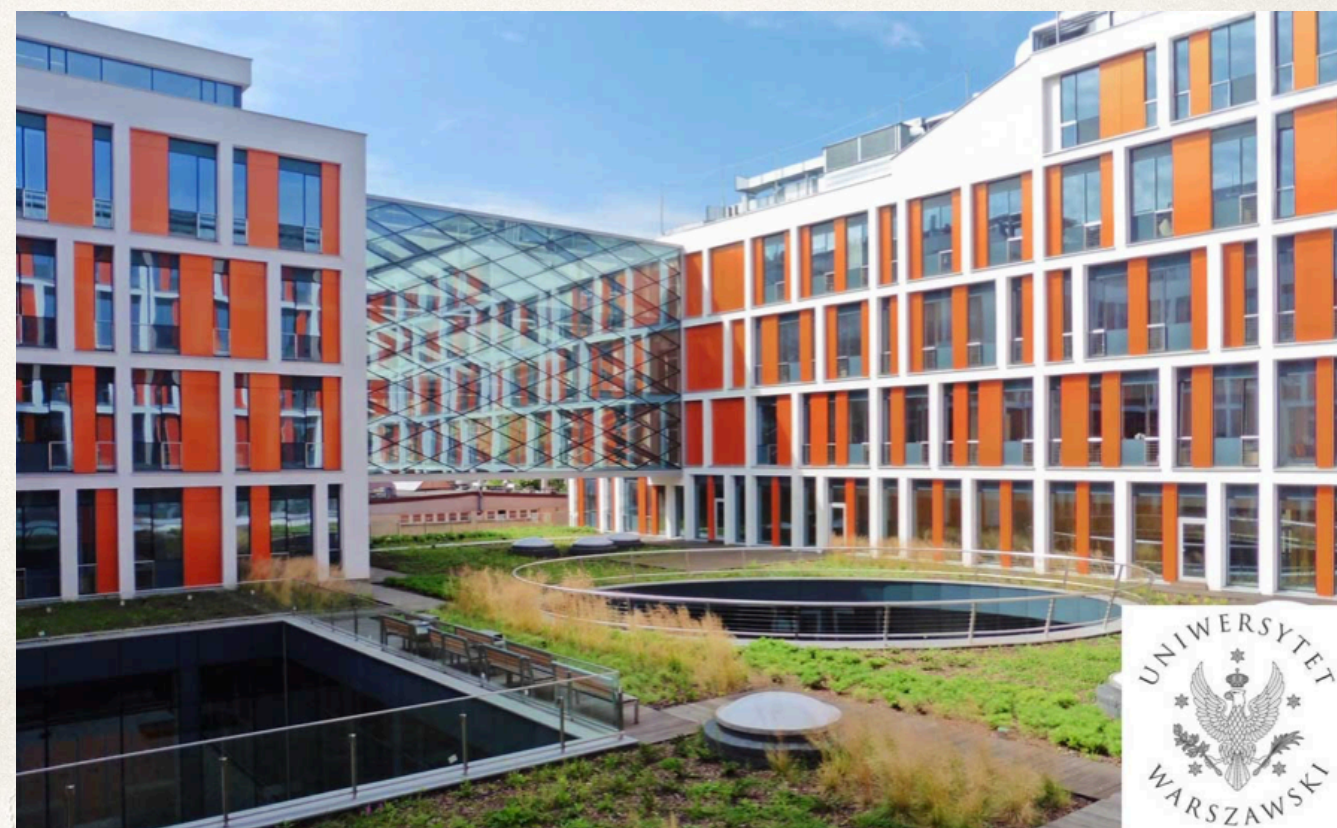
# Next Collaboration Meetings

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GSI, 1st -6th March, 2026



University of Warsaw,  
13th - 18th Sept., 2026





# Thank You!

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**Thank You - Yapeng and the whole IMP team for  
your all effort and excellent  
Collaboration Meeting in Lanzhou!**