

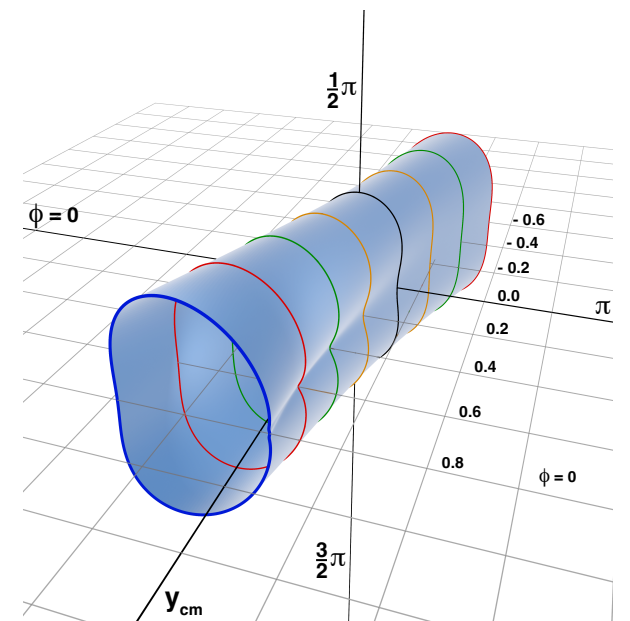
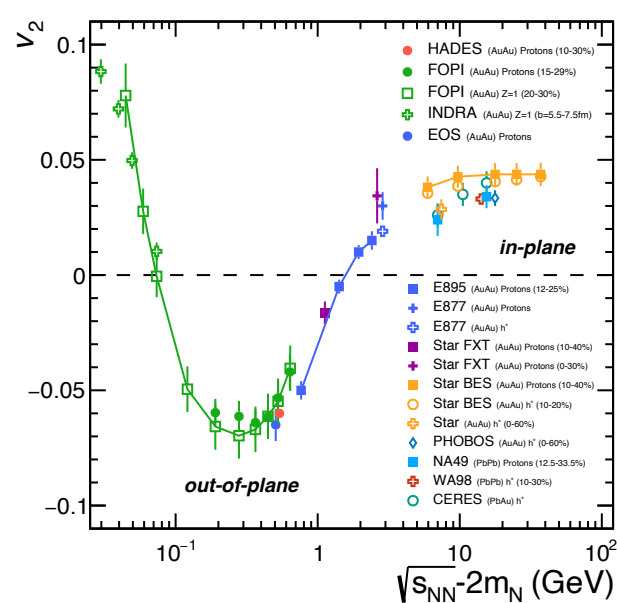
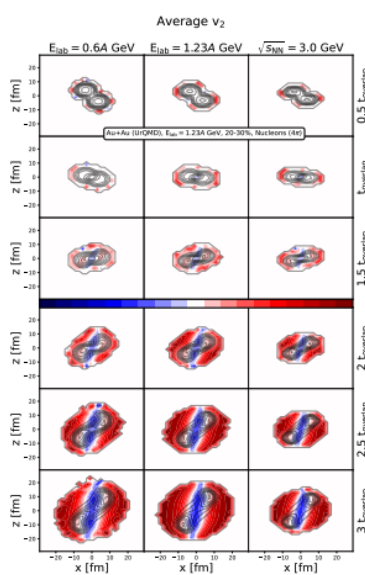
ExtreMe Matter Institute EMMI

EMMI Workshop

Collective phenomena and the Equation-of-State of dense baryonic matter

November 11-13, 2025

SB1 & KBW Lecture Hall, GSI Darmstadt, Germany



The study of strongly interacting matter lies at the intersection of heavy-ion physics and astrophysics, with the underlying theory being Quantum-Chromo-Dynamics (QCD). Both atomic nuclei and the dense interiors of astrophysical objects are connected via the Equation-of-State (EoS) of dense baryonic matter, making its study essential for understanding a range of phenomena.

The upcoming SIS100 accelerator at FAIR represents a critical step forward for high density baryonic matter studies, complementing existing accelerator facilities. This workshop will assess the current and upcoming experimental capabilities and challenges in probing the dense matter EoS, identify the required advancements that theoretical modeling of dense baryonic matter is confronted with and constrain modeling uncertainties, and fostering new collaborations across the boundary towards astrophysics.

Key Topics:

- Collective observables probing the high density EoS
- Theoretical modelling of the dense baryonic matter
- Multi-messenger studies of the EoS
- Data standardization and compilation for EoS studies

Invited Speaker:

Kshitij Agarwal
Jan Steinheimer
Manuel Lorenz
Hanna Zbroszczyk
Arnaud Le Fèvre
Elena Bratkovskaya
Joerg Aichelin
Wolfgang Trautmann
Pawel Danielewicz
Jean-Yves Ollitrault
Nu Xu
Tetyana Galatyuk
Anar Rustamov
Hannah Elfner

Organizers:

Behruz Kardan
Jacquelyn Noronha-Hostler
Tom Reichert

Information:

www.gsi.de/emmi/workshops

Website:

<https://indico.gsi.de/e/emmi-eos>

More about EMMI:

www.gsi.de/emmi