



Contribution ID: 12

Type: **Talk**

## Exploring cosmic matter with heavy-ion collisions

*Monday, August 30, 2021 9:00 AM (30 minutes)*

In heavy-ion collisions at intermediate energies, nuclear matter will be compressed to densities corresponding to the ones in the core of neutron stars. This opens the opportunity to explore the properties of strongly interacting matter in the laboratory, such as the high-density equation-of-state, which governs the structure of compact stellar objects, and the dynamics of neutron star mergers. Moreover, such experiments are well suited to search for elementary phases of high-density QCD matter, which may feature a chiral phase transition, possibly including mixed phases and a critical endpoint. These fundamental questions will be addressed by future heavy-ion programs at upcoming facilities, such as the Compressed Baryonic Matter (CBM) experiment at FAIR, and the Baryonic Matter at Nuclotron (BM@N) at NICA. Important detector components of these experiments, such as the silicon tracking systems and the forward hadronic calorimeters, are jointly developed by the two collaborations. The BM@N experiment will perform high-precision measurements of hadrons including multi-strange (anti-) hyperons and hypernuclei up to Au-beam energies of 3.8A GeV, while the CBM experiment will in addition study lepton pairs and charmed particles up to Au beam energies of 11A GeV. Most of these particles will be studied for the first time in this energy range. The physics programs and the status of the proposed experiments will be discussed.

### Is this abstract from experiment?

Yes

### Name of experiment and experimental site

CBM at FAIR, BM@N at NICA

### Is the speaker for that presentation defined?

Yes

### Details

Peter Senger, FAIR

### Internet talk

No

**Primary author:** SENGER, Peter (GSI)

**Presenter:** SENGER, Peter (GSI)

**Session Classification:** B Heavy Ion Collisions and Critical Phenomena