

Chapter 8: Connection and input to astro (particle) physics

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The chapter will cover several topics that connect different aspects of heavy-ion, nuclear and hadron physics at FAIR with astro (particle) physics. The chapter will be organized in several sections addressing the following arguments:

- ✓ Beams of protons, pions, and medium mass nuclei of particular relevance in the FAIR energy range for propagation of galactic cosmic rays (Alpha Magnetic Spectrometer (AMS) and future Chinese Space Station physics with cosmic rays)
- ✓ Neutrino (atmospheric and astrophysical neutrino calculations, charm production → prompt muons)
- ✓ Dark Matter and dark photon measurements (coordinate with Chapter 7)
- ✓ High-energy nuclear fragmentation reaction & their importance in astrophysics
- ✓ Opens questions & future experimental constraints of the nuclear EoS, e.g., Hyperon Puzzle (coordinate with Chapter 4)