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## Theoretical aspects: Isospin effects and EOS in nuclear reactions

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The isospin dependence of in-medium nuclear effective interactions is a fundamental issue in nuclear physics and has broad ramifications in astrophysics. Its uncertainties, especially the difference of neutron-proton interactions in the isosinglet and isotriplet channels, affect significantly the density and momentum dependence of the isovector single-nucleon potential and nucleon-nucleon short-range correlation in neutron-rich matter. Consequently, the neutron-proton effective mass splitting and the density dependence of nuclear symmetry energy are still rather uncertain. Heavy-ion reactions especially those involving rare isotopes is a useful tool for probing the isospin dependence of nuclear effective interactions through (1) the neutron-skin in coordinate and proton-skin in momentum of the initial state of colliding nuclei, (2) the density and momentum dependence of especially the isovector nuclear mean-field as well as (3) the isospin dependence of in-medium nucleon-nucleon cross sections. Experimental observables that are potentially good probes of the isospin dependence of in-medium nuclear effective interactions include the degree (stopping power) and time scale isospin equilibrium, relative yields and differential flow of neutrons and protons or light mirror nuclei as well high-energy/momentum particles such as hard photons. In this talk, several selected theoretical aspects of these issues will be discussed.

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**Classification de Session:** Isospin Effects and EoS in nuclear reactions

**Classification de thématique:** Isospin Effects and EoS in nuclear reactions: Theoretical aspects: Isospin effects and EOS in nuclear reactions