

Fizički odsjek, PMF, Sveučilište u Zagrebu
Bijenička cesta 32

Seminar Fizičkog odsjeka

Vrijeme (s.t.)

Mjesto

utorak 25. 11. 2014., 14:15 h

predavaonica F102

Explosive nucleosynthesis of heavy elements

Gabriel Martínez-Pinedo

Institut für Kernphysik, TU Darmstadt, Germany
GSI Helmholtzzentrum für Schwerionenforschung, Darmstadt, Germany

In this talk, I will review our current understanding of the nucleosynthesis of heavy elements in explosive environments by the so-called r-process. The two major astrophysical sites currently considered are core-collapse supernova and neutron star mergers. Each of them demands different nuclear physics ingredients for the nucleosynthesis modeling. In core-collapse supernova, the nucleosynthesis depends mainly on the neutron-richness of the ejecta that is determined by the spectral differences between the emitted electron neutrinos and antineutrinos. This difference is particularly sensitive to the nuclear symmetry energy at subsaturation densities. Neutron star mergers are expected to eject material that is so neutron rich that the nucleosynthesis becomes very robust and almost independent of the astrophysical conditions. However, it is very sensitive of the nuclear properties of the very exotic neutron rich nuclei that are produced during the nucleosynthesis event. Particularly important nuclear properties are masses, beta-decay rates and fission properties of neutron rich superheavy nuclei.

Voditelji seminara FO
Damir Pajić i Ivica Smolić