

The Structure and Signals of Neutron Stars, from Birth to Death



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Effects of the symmetry energy in core-collapse supernovae

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This presentation discusses the role of the equation of state (EOS) in core-collapse supernovae, with focus on the nuclear symmetry energy. First we review the extended set of supernova EOS which we have developed recently and compare their characteristic properties with experimental constraints. The new EOSs are then applied in hydrodynamical simulations with detailed neutrino transport, where we investigate effects on the supernova dynamics and implications on nucleosynthesis conditions in the so-called wind phase. Regarding the latter, we can conclude that the current constraints on the finite-temperature symmetry energy allow only slightly neutron-rich conditions which would not result in a full r-process.

Author: HEMPEL, Matthias (B)

Presenter: HEMPEL, Matthias (B)

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