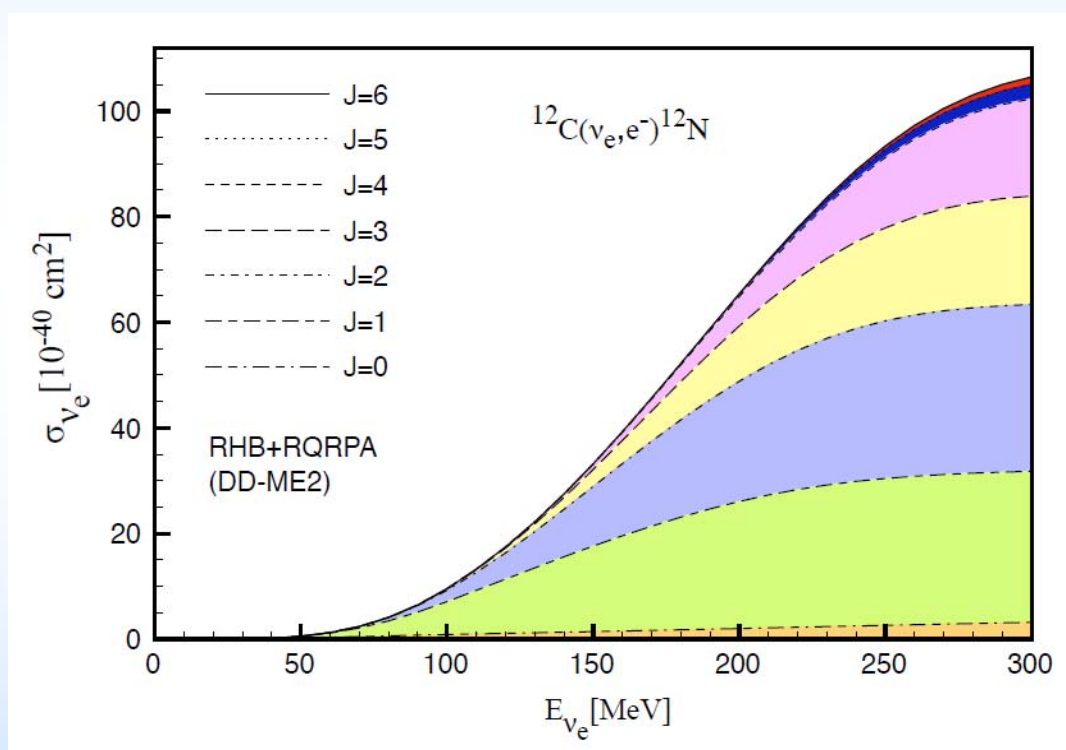




ΣΕΜΙΝΑΡΙΟ

Astrophysically relevant weak interactions in nuclei:

neutrino induced reactions, electron capture, and beta decays



Prof. Nils Paar

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Αίθουσα A₃₁ της ΣΘΕ



Από τις 12:15 θα σερβίρονται αναψυκτικά, βουτήματα κ.λ.π.

Astrophysically relevant weak interactions in nuclei: neutrino induced reactions, electron capture, and beta decays

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The impact of nuclear structure on astrophysics has become increasingly important, particularly in solving the unresolved problems in supernova explosions and production of heavier chemical elements. Of particular importance are weak interactions with nuclei: neutrino-nucleus reactions, electron capture, and beta decays. A unified description of weak interaction rates will be discussed, where the nuclear ground state and relevant excitations are described in the relativistic mean-field framework, while the weak lepton-hadron interaction is expressed in the current-current form. Neutrino-nucleus cross sections are evaluated for nuclei of interest for neutrino detectors and supernova neutrinos at various temperatures. The present theoretical framework is currently being developed for systematic studies of muon capture rates, beta decays of r-process nuclei, and electron capture in the core collapse of a massive star.