Contribution ID: **6** Type: **Original Talk**

Dynamo&oscillation effects in supernova neutrino spectra

Tuesday, 24 June 2025 16:00 (15 minutes)

The neutrino transport in magnetized stellar plasma of type II supernovae is considered paying particular attention for fluctuations in neutrino-nuclear scattering. These effects can be described by the Fokker-Planck equation for the neutrino phase space distribution function [1]. The respective kinetic coefficients are determined by energy transfer and straggling cross sections in neutrino collisions with a magnetized nucleon gas caused by the neutral current Gamow-Teller interaction. Such scattering leads to neutrino acceleration at realistic parameters of stellar environment. As is shown the high-energy component of the electron antineutrino flux is enhanced in addition due to neutrino oscillations. Such a strengthening of the spectrum hardness is particularly pronounced in the case of the inverted mass ordering and makes the signal more registrable by ground-based detectors. The possibilities of supernova neutrino observations by Cherenkov underwater telescopes and sensitivity to mass ordering are discussed.

1. V. N. Kondratyev, IJMPE 33 (2024) 2441024

Primary author: KONDRATYEV, Vladimir (ОИЯИ)

Presenter: KONDRATYEV, Vladimir (ОИЯИ)

Session Classification: Cosmo- and geophysical aspects of cosmic rays at the ground level

Track Classification: Cosmo- and geophysical aspects of cosmic rays at the ground level