



Contribution ID : 251

Type : **Poster**

Prospects for searching for the neutrino magnetic moment in processes of solar neutrino scattering on superfluid helium-4

Tuesday, 27 October 2026 19:25 (5)

The processes of solar neutrino scattering by the H and He atoms are considered. Along with the weak neutrino-electron interaction, the electromagnetic interaction due to the neutrino magnetic moment μ_ν is also taken into account. This study can be useful for the analysis of data from neutrino as well as dark matter experiments. Specifically, it could be useful to estimate the irreducible solar background in the SArOV Tritium-Ultra-Reach Neutrino Experiment (SATURNE), which is under preparation within the scientific program of National Center for Physics and Mathematics. One of the main goals of SATURNE is the search for the neutrino magnetic moment, which is the most studied among neutrino electromagnetic (EM) properties and the discovery of which will open a window to physics beyond Standard Model (SM). For this purpose, a high-intensity tritium source of electron antineutrinos will be employed in combination with different detectors, including the detector based on He-II. We calculate numerically the SM and EM neutrino-electron and neutrino-atom recoil spectra in the He detector in SATURNE for the case of solar neutrinos arising from the solar nuclear reactions. The obtained event rates are used to estimate the detector sensitivity to μ_ν of solar neutrinos. In addition, we study the differential cross sections of tritium neutrino scattering by electrons in the H atoms and outline characteristic deviations from the customary free-electron approximation.

Primary author(s) : STEPANTSOV, Ivan (Faculty of Physics, Lomonosov MSU)

Presenter(s) : STEPANTSOV, Ivan (Faculty of Physics, Lomonosov MSU)

Session Classification : Poster session

Track Classification : Astroparticle physics