

# Neutrino magnetic moments in low-energy neutrino scattering on condensed matter systems

*Monday, 30 August 2021 19:15 (15)*

Neutrino scattering on condensed matter systems at low-energy transfer can serve both as a tool for searching the BSM physics, for example, such as neutrino electromagnetic interactions [1], and as a test of the Standard Model at low-energy scale [2]. In the case of low-energy elastic neutrino scattering by electrons and nuclei in a liquid or a solid target, it is necessary to take into consideration collective effects in the electron and nuclear subsystems of the target. We develop the corresponding theoretical apparatus which is based on the formalism of the density-density and current-current Green's functions. Calculations in the case of a superfluid He-4 target are presented to show the roles of neutrino magnetic moments and collective excitations. Our results can be used in the search of neutrino electromagnetic interactions in future low-energy neutrino scattering experiments with liquid or solid targets [2].

This research has been supported by the Interdisciplinary Scientific and Educational School of Moscow University "Fundamental and Applied Space Research" and also by the Russian Foundation for Basic Research under Grant No. 20-52-53022-GFEN-a. The work of GD is supported by the BASIS Foundation No. 20-2-9-9-1.

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## Reference to paper (DOI or arXiv)

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**Session Classification** : Poster session 1

**Track Classification** : Neutrino physics and astrophysics