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Spin-light of neutrino in astrophysical media

The Spin Light of Neutrino (SLν) is a new possible mechanism of electromagnetic radiation by a massive neutrino (with nonzero magnetic moment) moving in media [1]. Although this effect is strongly suppressed due to smallness of neutrino magnetic moment, for ultra-high neutrino energies, for instance for PeV neutrino recently observed by the IceCube collaboration [2], consideration of the SLν is of interest in the case of neutrinos propagating in dense matter. Several astrophysical settings in which the effect might be possible, such as a neutron star, supernova, gamma-ray burst, and relic neutrino background, are considered. We also note that due to the specific polarization properties the SLν should be considered in connected with the observed polarization of GRB emission [3].

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Experimental Collaboration

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