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Oscillations of Majorana neutrinos in supernova and CP violation

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Leptonic CP violation is one of the most important topics in neutrino physics. CP violation in the neutrino sector is also strongly related to the nature of the neutrino: whether it is a Dirac or a Majorana particle. In this contribution CP-violating effects in Majorana neutrino oscillations in supernova media are studied. We show that resonances in neutrino-antineutrino oscillations induced by strong magnetic fields of astrophysical objects appear in the case of nonzero CP-violating phases. Our findings suggest a potential astrophysical setup for studying the nature of neutrino masses and leptonic CP violation and may be important for future neutrino experiments, for example, such as JUNO and Hyper-Kamiokande.

Based on: A.Popov, A.Studenikin, "Manifestations of nonzero Majorana CP-violating phases in oscillations of supernova neutrinos", Phys.Rev.D 103 (2021) 11, 115027.

In-person participation

No

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