

Spin effects in the neutrino gravitational scattering

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I study the neutrino scattering off a rotating black hole surrounded by a realistic magnetized accretion disk called a Polish doughnut. A neutrino is supposed to have a nonzero magnetic moment. I account for the contributions of the electroweak interaction of a neutrino with plasma of the disk and the interaction of the neutrino magnetic moment with magnetic fields in the disk on the neutrino spin precession. It leads to the conversion of active left neutrinos into sterile right particles. I study various configurations of magnetic fields in the disk. I discuss the idea of the neutrino tomography of magnetic field distributions in accretion disks near black holes.

References

M.Dvornikov, Neutrino spin oscillations in a magnetized Polish doughnut, arXiv:2307.10126

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