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Kicks of magnetized strange quarks induced by anisotropic emission of neutrinos

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Beta disintegration is studied in the presence of a magnetic field, which imposes a preferential direction on the emission of neutrinos. It is explored the possibility that this anisotropy in neutrino emission can account for observed Neutron (Quarks) Star velocities (kicks). The conditions under which the anisotropic emission of neutrinos (due to the magnetic field present in the system) causes a “kick” of the compact star are discussed. The matrix element for the beta decay process is computed from first principles taking into account the W boson propagator in presence of a strong magnetic field. The neutrino emissivity is also computed.

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