

Neutrino recoil force in electron-capture decay of polarized nuclei: measurement prospects and potential applications

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Due to parity violation in the weak interaction, a sample of radioactive atoms will experience a recoil force from neutrino radiation accompanying electron capture by polarized nuclei. The recoil force resulting from anisotropy of neutrino angular distribution can be measured by modern micromechanical devices. Both angular distribution and recoil force are calculated for the case of allowed nuclear transitions. We consider the most suitable radioactive isotopes for such a measurement. Potential applications are discussed.

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