

# MAGNETO- $\nu$ : Searching for keV sterile neutrino dark matter in $^{241}\text{Pu}$ beta decays

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Sterile neutrino of keV-scale mass is one of strong dark matter candidates. One of the ways for observing “sterile” neutrino is using nuclear beta decays. Non-zero mixing of sterile neutrino to electron neutrino allows them being emitted in nuclear beta decays, which modifies the shape of beta decay spectrum by adding a 4-th spectral component with reduced end-point energy. This modification produces the “kink” structure at the end-point of the sterile neutrino contribution in the beta spectrum, where is the decay  $Q$  value minus the mass of sterile neutrino. MAGNETO- $\nu$  experiment is a search for keV sterile neutrino in  $^{241}\text{Pu}$  beta decays with magnetic quantum sensors. Enriched  $^{241}\text{Pu}$  sources will be fully embedded into the magnetic quantum sensors and full decay energies from  $^{241}\text{Pu}$  beta decays will be measured with an energy resolution of  $O(10\text{ eV})$ . In this talk, experimental overview as well as our first  $^{241}\text{Pu}$  measurement with a preliminary limit on keV sterile neutrino mixing will be presented.

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