

Oscillations and sterile neutrinos

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Sterile neutrinos are hypothetical massive neutral leptons, which mix with the neutrinos of the Standard Model, and which are singlets of the SM gauge symmetry. Therefore their mass term can be included directly in the Lagrangian, assuming they are Majorana fermions. They are motivated by their potential to explain the origin of dark matter, light neutrino masses and oscillations, and baryonic asymmetry of the universe (leptogenesis). The mass and mixing of a sterile neutrino to active flavours are free parameters which can be probed in the Forward Physics Facility on very large mass window, improving the current experimental bounds significantly. My envisioned contribution to the BSM physics section of FPF whitepaper consists of a short summary of the seesaw mechanism (the most common way of light neutrino mass generation), active-to-sterile neutrino mixing, present experimental bounds on sterile neutrino mixing for sterile neutrino mass on MeV and GeV scale, and the prospects of FPF improved bounds.

Primary author: KÄRKKÄINEN, Timo

Presenter: KÄRKKÄINEN, Timo

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