

Probing Light Mediators in the Radiative Emission of Neutrino Pair

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We propose a new possibility of using the coherently enhanced neutrino pair emission to probe light-mediator interactions between electron and neutrinos. With typical momentum transfer at the atomic $\mathcal{O}(1\text{eV})$ scale, this process is extremely sensitive for the mediator mass range $\mathcal{O}(10^{-3} \sim 10^4)\text{eV}$. The sensitivity on the product of couplings with electron (g^e or y^e) and neutrinos (g^ν or y^ν) can touch down to $|y^e y^\nu| < 10^{-9} \sim 10^{-19}$ for a scalar mediator and $|g^e g^\nu| < 10^{-15} \sim 10^{-26}$ for a vector one, with orders of improvement from the existing constraints.

Attendance type

In-person presentation

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