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Muon-decay parameters at COHERENT

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We study the most general Lagrangian for muon decay at low energies, including light Dirac right-handed neutrinos (νWEFT), in the COHERENT experiment at the Spallation Neutron Source at Oak Ridge National Laboratory. Using the COHERENT data, we derive the first direct constraint on the Michel parameters governing the $\bar{\nu}_\mu$ energy distribution. We also discuss future sensitivities and assess the implications for the Lorentz structure of the interactions mediating muon decay.
We thus demonstrate that Coherent Elastic Neutrino-Nucleus Scattering (CEνNS) measurements at spallation sources are valuable probes of muon decay physics.

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