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Michel parameters in the presence of massive Dirac and Majorana neutrinos

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We analyse the effects of Dirac and Majorana neutrinos on leptonic lepton decays using the most general four-lepton effective interaction Hamiltonian of dimension six. We calculate the specific energy and angular distribution of the final charged lepton, complemented with the decaying and final charged lepton polarization. We discuss the new generalized Michel parameters and focus on the effects of the heavy neutrino masses that would lead to sizable contributions on scenarios where the new sterile neutrinos have non-negligible mixing. Specifically, the most promising scenario is found for the case of τ decay with one heavy final-state neutrino with a mass around $10^2 - 10^3$ MeV, the linear term suppression could be of order 10^{-3}, low enough to be measured in current and forthcoming experiments.

Category

talk

Primary author: MARQUEZ, Juan (C)

Presenter: MARQUEZ, Juan (C)

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