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Corrections to the atmospheric neutrino mixing from charged Higgs and W' contribution to -nucleon scattering

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Abstract:

We consider charged Higgs and W' gauge boson contributions to the quasielastic scattering $\nu_\tau + n \to \tau + p$. These effects modify the standard model cross section for this process and thus impact the extraction of the neutrino mixing angle θ_{23}. We include form factor effects in our calculations and find the deviation of the actual mixing angle from the measured one, assuming the standard model cross section, can be significant and can depend on the energy of the neutrino.

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