

Correlating Charged Lepton $g - 2$ with Neutrino Magnetic Moments

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We show that the models that induce neutrino magnetic moments while maintaining their small masses naturally also predict observable shifts in the muon anomalous magnetic moment. This shift is of the right magnitude to be consistent with the Brookhaven measurement as well as the recent Fermilab measurement of the muon $g-2$. This points out the direct correlation between the magnetic moment of SM charged lepton and neutral lepton (neutrino) by showing that the measurement of muon $g-2$ by the Fermilab experiment can be an in-direct and novel test of the neutrino magnetic-moment hypothesis, which can be as sensitive as other ongoing-neutrino/dark matter experiments. Such a correlation between muon $g-2$ and the neutrino magnetic moment is generic in models employing leptonic family symmetry to explain a naturally large neutrino magnetic moment. This talk will be based on results obtained with K.S. Babu, Manfred Lindner, and Vishnu P.K. and presented in hep-ph 2007.04291 and 2104.03291.

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