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Dark Matter Induced Nucleon Decay Signals in Mesogenesis

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I introduce and study the first class of signals that can probe the dark matter in Mesogenesis which will be observable at current and upcoming large volume neutrino experiments. The well-motivated Mesogenesis scenario for generating the observed matter-anti-matter asymmetry necessarily has dark matter charged under baryon number. Interactions of these particles with nuclei can induce nucleon decay with kinematics differing from spontaneous nucleon decay. I calculate the rate for this process and develop a simulation of the signal that includes important distortions due to nuclear effects. I estimate the sensitivity of DUNE, Super-Kamiokande, and Hyper-Kamiokande to this striking signal.

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