

Assisted baryon number violation in $4k+2$ dimensions

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Proton decay in six-dimensions orbifolded on T^2/Z_2 is highly suppressed at tree level. This is because baryon number violating operators containing only the zero mode of bulk fermions must satisfy a selection rule emerging from the remaining symmetry of the orbifold. Here we show that this relation can be evaded with operators made up of Kaluza Klein partners of the Standard Model fermions. Together with the interaction of spinless adjoint scalar partner of the hypercharge gauge boson, these novel operators generate dark matter assisted protons decay at mass dimension 8. Similarly, dark matter assisted proton proton annihilation and hydrogen-antihydrogen oscillation are also predicted by the model.

Track type

Collider and BSM Physics

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