Abstract Submitted
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Constraints on Universal Extra Dimensions Theory from Dark Matter Direct Detection[1] CHRISTOPHER LEFKY[2], GINTARAS DUDA[3], Creighton University, Omaha, Nebraska — The theory of Universal Extra Dimenions (UED) contains an excellent dark matter candidate, the $B^{(1)}$, which is the lightest Kaluza-Klein excitation/particle (LKP). Constraints can be placed on the two most fundamental parameters of UED Theory, R (the size of the extra-dimension) and Λ (the cutoff scale of the theory) using recent dark matter direct detection results. Recent limits from the XENON experiment are used to calculate a generic WIMP-nucleon cross section for a range of masses. Using UED phenomenology, these cross section limits can yield limits on the mass splitting, Δ (the ratio of the Lightest Kaluza-Klein particle (LKP) to the Lightest Kaluza-Klein quark (LKQ)). This project builds upon previous work where constraints were placed on R and Λ for fixed values of the mass splitting. The poster presentation will address constraints on the fundamental UED parameters as a function of mass splitting and will comment on the usefulness of direct detection bounds to restrict UED theory. Results obtained are compared against recent accelerator bounds, specifically the lower bound for 1/R from the ATLAS experiment.

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