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Exploring the MSSM Neutralino Parameter Space using DarkSUSY MEHDI MALEKI SANUKESH, Creighton Univ — Historically, one of the most promising dark matter candidates has been the Neutralino from the Minimal Supersymmetric Standard Model (MSSM). Although Supersymmetry has not been experimentally confirmed, it has been tightly constrained by both accelerator limits and astrophysical bounds. DarkSUSY is a computer code that is based on the MSSM, and which allows for the calculation of Neutralino densities, cross sections, and expected detection rates in both direct and indirect detection experiments. In this work we use DarkSUSY, together with the latest accelerator constraints and astrophysical bounds, to explore parameter space. Beginning with 700,000+ randomly generated models we explore if the MSSM has been experimentally ruled out. Surviving models and interesting regions of surviving parameter space will be presented and discussed.

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