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Uncertainties in the Calculation of Dark Matter Observables

The LHC's null results for searches beyond the the Standard Model have ruled out the simplest and most constrained version of supersymmetry (SUSY). Many more formulation of SUSY remain viable and to be tested by experiments, but these require detailed computations to be carried out. Numerous publicly available software packages have been developed for such calculations, and comparisons of their results help us assess their reliability. Such studies have been carried out hitherto, but have focused on the regime of SUSY ruled out by the LHC. We present here results from such a comparative study that focuses on the high mass region of the SUSY parameter space. We find notable differences between calculation of the sparticle mass spectrum and of dark matter observables by the publicly available calculators. Furthermore, the differences in the mass spectrum easily propagate into stark differences in the calculation of dark matter observables.

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