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Impact of Jet Veto Resummation on Slepton Searches

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Jet vetoes are a common tool in the experimental SUSY searches for eliminating the SM QCD background. They introduce large logarithms (of the jet veto scale over the partonic invariant mass) in the SUSY cross sections, which increase with the SUSY particle mass and need to be resummed to obtain reliable cross section predictions. Using slepton production as an example, we show that the theoretical uncertainties associated with the jet veto are large, and when taken into account have a sizeable impact already on present exclusion limits. This is improved by calculating the resummed cross section to higher order, which allows us to obtain accurate predictions even for high slepton masses, as probed by the LHC in the upcoming years.

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