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SFitter: Reconstructing the MSSM Lagrangian from LHC data

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The LHC provides us with new possibilities to test physics at the TeV scale and look for signs of new physics beyond the Standard Model. If supersymmetry at the TeV scale is realised in nature, LHC will be able to find many new particles and measure cross sections and branching ratios which differ significantly from Standard Model expectations. Then the question will arise: "What is the value of the fundamental parameters in the MSSM Lagrangian?"

SFitter is a tool to answer this question. It takes the LHC data as input and performs a scan over the parameter space using the unconstrained TeV-scale MSSM Lagrangian. A newly developed Weighted-Markov-Chain technique performs this task in a more efficient way. Besides finding the best fit, SFitter also produces a ranked list of secondary minima and a likelihood map, which can be integrated over several parameters to produce one- or two-dimensional probability maps.

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