

Use and limitations of simplified-model constraints from the LHC

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Simplified models have become one of the standard methods to interpret searches for new physics at the LHC. They reduce full models with dozens of particles and a plethora of parameters to subsets with just a handful of new states. The virtue of simplified model spectra (SMS), namely that a full model decomposes into many different SMS, also defines their main challenge: depending on the complexity of the mass and decay patterns, a full model may not be fully reconstructed by SMS.

In this talk, I present SModelS, an automatised public tool for interpreting simplified model results from LHC SUSY searches. I explain the working principle and how SModelS can be used -standalone or interfaced with micrOMEGAs- to a) constrain SUSY and non-SUSY models of new physics and b) identify interesting channels for which no SMS results are available. Finally, I address the limitations of the approach, that is to what extent full models can indeed be constrained by SMS results.

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