

Global Fits with GAMBIT

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The wide range of probes of physics beyond the standard model (BSM) leads to the need for tools that combine experimental results to make the most robust possible statements about the validity of theories of new physics and the preferred regions of their parameter space. In this talk, I will introduce a new code for such analyses: GAMBIT, the Global and Modular BSM Inference Tool. GAMBIT is a flexible and extensible framework for global fits of essentially any BSM theory. DarkBit, the dark matter (DM) portion of the code, contains new tools for calculation of likelihoods from gamma-ray and direct DM searches, as well as routines for the calculation of the relic density of an arbitrary model and interfaces to existing DM codes. The rest of the code provides complimentary limits on production of new particles from the LHC and LEP, complete flavour constraints from LHCb, LHC Higgs production and decay measurements, and various electroweak precision observables. I will discuss the code's capabilities, particularly focusing on the DM observable and likelihood calculators, and then present results of scans of the parameter space of the Minimal Supersymmetric Standard Model.

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