

SModels - new developments and applications

Saturday, July 7, 2018 11:15 AM (15 minutes)

ATLAS and CMS have performed a large number of searches for physics beyond the Standard Model (BSM). The results are typically presented in the context of simplified models, containing only a few new particles with fixed decay branching ratios, and yielding generic upper limits on the cross section as a function of particle masses. The interpretation of these limits within realistic BSM scenarios is non-trivial and is best done by automated computational tools. SModels is such an automatized tool, allowing to decompose models of new physics obeying a Z_2 symmetry into simplified model components, and to compare these against a large database of experimental results. The latest release, version 1.1, extended the functionality from comparing to upper limit maps to using also efficiency maps (thus enabling the combination of simplified models), and includes likelihood and chi-square calculations, extended information on the topology coverage as well as an extended database of experimental results. I will present the tool emphasising in particular the new developments. I will then discuss physics applications, including a recent study on the coverage of the pMSSM by the available simplified model results. The discussion illustrates how SModels can be used to identify important constraints, untested regions and interesting new signatures. An outlook to future developments will also be given.

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Session Classification: Beyond the Standard Model

Track Classification: Beyond the Standard Model