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Interpreting the simplified models results from the LHC with SModelS

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SModelS is a tool designed for the interpretation of the LHC searches for Beyond Standard Model (BSM) physics based on Simplified Models Spectra (SMS).

SModelS performs the decomposition of arbitrary BSM scenarios featuring a Z_2 symmetry into their SMS components, and evaluates the theoretical predictions for their production cross sections. These predictions are then compared with the results from the LHC searches implemented in a comprehensive and up-to-date database, in the form of cross section upper limit maps or signal efficiency maps.

In particular the usage of efficiency maps is one of the main new features of the upcoming version SModelS v1.1. It allows for the combination of different simplified models for the evaluation of cross section upper limits, thus increasing the constraining power of SModelS.

As an application, we show how SModelS has been used for the study of specific supersymmetric models not only to constrain the theory's parameter space, but also to highlight interesting regions currently not covered by the experiments. This way we can also give feedback to the experiments for where to look next.

Authors: LESSA, Andre (IFGW - UNICAMP); AMBROGI, Federico (Austrian Academy of Sciences (AT)); KRAML, Sabine (Centre National de la Recherche Scientifique (FR)); KULKARNI, Suchita (Austrian Academy of Sciences (AT)); LAA, Ursula (LPSC Grenoble); MAGERL, Veronika (Albert-Ludwigs-Universitaet Freiburg (DE)); WALTENBERGER, Wolfgang (Austrian Academy of Sciences (AT))

Presenter: AMBROGI, Federico (Austrian Academy of Sciences (AT))

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