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HiggsPredictions, HiggsBounds and HiggsSignals: A toolbox for BSM Higgs phenomenology

We present significant improvements to the codes HiggsBounds and HiggsSignals, which compare model predictions of BSM models with extended scalar sectors to searches for additional scalars and measurements to the 125GeV Higgs boson. The codes have been re-written in modern C++ with a native python interface for easy interactive use. We discuss the cleaned up user interface for providing model predictions, now part of the new sub-library HiggsPredictions, which also provides access to many tabulated cross sections and BRs in reference models such as the SM. HiggsBounds now allows implementing experimental limits purely through json data files without any coding required and has received a better handling of clusters of BSM particles of similar mass, even for complicated search topologies. In HiggsSignals, the treatment of different types of measurements has been unified, both in the χ^2 computation and in the data file format used to implement experimental results.

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