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Constrained Supersymmetry after two years of LHC data: a global view with Fittino

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We perform global fits to the parameters of the Constrained Minimal Supersymmetric Standard Model (CMSSM) and to a variant with non-universal Higgs masses (NUHM1). In addition to constraints from low-energy precision observables and the cosmological dark matter density, we take into account the LHC exclusions from searches in jets plus missing transverse energy signatures with about 5\,fb^{-1} of integrated luminosity. We also include the most recent upper bound on the branching ratio $B_s \to \mu\mu$ from LHCb. Furthermore, constraints from and implications for direct and indirect dark matter searches are discussed. The best fit of the CMSSM prefers a light Higgs boson just above the experimentally excluded mass. We find that the description of the low-energy observables, $(g-2)_\mu$ in particular, and the non-observation of SUSY at the LHC become more and more incompatible within the CMSSM. A potential SM-like Higgs boson with mass around 126 GeV can barely be accommodated. Values for $calB(B_s \to \mu\mu)$ just around the Standard Model prediction are naturally expected in the best fit region. The most-preferred region is not yet affected by limits on direct WIMP searches, but the next generation of experiments will probe this region. Finally, we discuss implications from fine-tuning for the best fit regions.

Authors: SARRAZIN, Bjorn (Deutsches Elektronen-Synchrotron (DE)); HENSEL, Carsten (Georg-August-Universitaet Goettingen (DE)); Prof. DREINER, Herbert (University of Bonn); DESCH, Klaus (Universitaet Bonn (DE)); UHLENBROCK, Mathias (Universitaet Bonn (DE)); HAMER, Matthias (Georg-August-Universitaet Goettingen (DE)); KRAMER, Michael (Institut f. Theoretische Physik (E)-Rheinisch-Westfaelische Tec); NGUYEN, Nelly (University of Hamburg); WIENEMANN, Peter (University of Bonn); BECHTLE, Philip (Deutsches Elektronen-Synchrotron (DE)); BRINGMANN, Torsten (Hamburg University); POROD, Werner (Uni. Würzburg); Dr PRUDENT, Xavier (Technische Universität Dresden)

Presenter: Dr PRUDENT, Xavier (Technische Universität Dresden)

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