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Yukawa-unified SUSY

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The requirement of t-b-tau Yukawa coupling unification is common in simple grand unified models based on the gauge group SO(10), and it also places severe constraints on the expected spectrum of superpartners. For Yukawa-unified models with \mu>0, the spectrum is characterized by three mass scales:
(i) first and second generation scalars in the multi-TeV range,
(ii) third generation scalars, higgsinos and heavy Higgses in the few-TeV range and
(iii) gluinos in the range of a few hundred GeV with chargino masses around 100-160 GeV.
In such a scenario, gluino pair production should occur at large rates at the LHC, and perhaps even at the Tevatron, followed by gluino three-body decays into neutralinos or charginos. I will discuss the requirements for Yukawa unification, typical mass spectra, the resulting collider phenomenology, as well as the importance of b-tagging for discovering Yukawa-unified SUSY.

Author: KRAML, Sabine (LPSC Grenoble)

Co-auteurs: LESSA, Andre (Oklahoma); SUMMY, Heaya (Oklahoma); BAER, Howie (Oklahoma); SEKMEN, Sezen (Florida State)

Orateur: KRAML, Sabine (LPSC Grenoble)

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