Contribution ID: **27** Type: **not specified**

Diagnosis of Supersymmetry Breaking Mediation Schemes by Mass Reconstruction at the LHC

If supersymmetry is discovered at the LHC, the next question will be the determination of the underlying model. While this may be challenging or even intractable, a more optimistic question is whether we can understand the main contours of any particular paradigm of the mediation of su- persymmetry breaking. The determination of superpartner masses through endpoint measurements of kinematic observables arising from cascade decays is a powerful diagnostic tool. In particular, the determination of the gaugino sector has the potential to discriminate between certain media- tion schemes (not all schemes, and not between different UV realizations of a given scheme). We reconstruct gaugino masses, choosing a model where anomaly contributions to SUSY breaking are important (KKLT compactification), and find the gaugino unification scale. Moreover, reconstruc- tion of other superpartner masses allows us to solve for the parameters defining the UV model. The analysis is performed in the stop and stau coannihilation regions where the lightest neutralinos are mainly gauginos, to additionally satisfy dark matter constraints. We thus develop observables to determine stau and stop masses to verify that the coannihilation mechanism is indeed operational, and solve for the relic density.

Authors: Dr KRISLOCK, Abram (Stockholm University); Dr DUTTA, Bhaskar (Texas A&M University); Mr WANG, Kechen (Texas A&M University); Dr SINHA, Kuver (Texas A&M University); Dr KAMON, Teruki (Kyungpook National University, Texas A&M University)

Presenter: Dr KRISLOCK, Abram (Stockholm University)