Contribution ID: **109** Type: **Parallel talks**

LHC Signatures of the E_6SSM and its extensions

The E_6 inspired extension of the minimal supersymmetric (SUSY) standard model (MSSM) with an extra $U(1)_N$ gauge symmetry, under which right-handed neutrinos have zero charge, involves exotic matter beyond the MSSM to ensure anomaly cancellation. In particular, there are three families of extra exotic quarks and several $SU(2)_W$-doublets that have the quantum numbers of the MSSM Higgs doublets. We discuss the phenomenology of extra matter, whose discovery provides a smoking gun signal of this model (E_6SSM). We also consider the variant of the E_6SSM (SE_6SSM) in which a single discrete $\tilde{Z}_2^H$ symmetry permits suppressing rapid proton decay and non-diagonal flavor transitions. In the SE_6SSM the cold dark matter can be composed of the lightest neutral exotic fermion and gravitino. We argue that there are some regions of the SE_6SSM parameter space, which are safe from all current constraints, and discuss the implications of this model for collider phenomenology.

Author: Dr NEVZOROV, Roman (P.N. Lebedev Physical Institute of the Russian Academy of Sciences)

Co-authors: MORETTI, Stefano (University of Southampton); KING, Stephen Frederick (University of Southampton (GB))

Presenter: Dr NEVZOROV, Roman (P.N. Lebedev Physical Institute of the Russian Academy of Sciences)

Session Classification: SUSY: Phenomenology and Experiment

Track Classification: SUSY: Phenomenology and Experiment