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Z' production at LHC in an extended MSSM

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Searching for heavy neutral gauge bosons Z', predicted in extensions of the Standard Model based on a U' gauge symmetry, is among the main new physics investigations undertaken by the experiments at the Tevatron and at the Large Hadron Collider. We study Z' phenomenology at hadron colliders according to several U'-based models and in the Sequential Standard Model. In particular, as far as its decay is concerned, we shall include possible Z' decays into supersymmetric particles, besides the Standard Model modes so far investigated.

We shall point out the new features of the MSSM, once it is extended by means of a U' group, and consider a few benchmarks points in the parameter space. As for Z' decays into sfermions, we shall account for the D-term contribution, due to the breaking of U', to slepton and squark masses. Results on branching ratios and cross sections will be presented, as a function of the MSSM and U' parameters, which will be varied within suitable ranges. We shall pay special attention to the decay into neutralino and charged-slepton pairs and gauge the feasibility to discover supersymmetry through this channel at the LHC.

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