



## **Z'** production at LHC in an extended MSSM

*Saturday 7 July 2012 11:30 (15 minutes)*

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 benchmark 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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