ID de Contribution: **7** Type: **Non spécifié**

The rise and fall of light stops in the LHC top quark sample

lundi 15 avril 2024 15:20 (25 minutes)

We discuss the possibility that light new physics in the top quark sample at the LHC can be found by investigating with greater care well known kinematic distributions, such as the invariant mass m_{bl} of the b-jet and the charged lepton in fully leptonic $t\bar{t}$ events. We demonstrate that new physics can be probed in the rising part of the *already measured* m_{bl} distribution. To this end we analyze a concrete supersymmetric scenario with light right-handed stop quark, chargino and neutralino. The corresponding spectra are characterized by small mass differences, which make them not yet excluded by current LHC searches and give rise to a specific end-point in the shape of the m_{bl} distribution. We argue that this sharp feature is general for models of light new physics that have so far escaped the LHC searches and can offer a precious handle for the implementation of robust searches that exploit, rather than suffer from, soft bottom quarks and leptons. Recasting public data on searches for new physics, we identify candidate models that are not yet excluded. For these models we study the m_{bl} distribution and derive the expected signal yields, finding that there is untapped potential for discovery of new physics using the m_{bl} distribution.

Auteur principal: SENGUPTA, Dibyashree (INFN, Laboratori Nazionali di Frascati)

Orateur: SENGUPTA, Dibyashree (INFN, Laboratori Nazionali di Frascati)

Classification de Session: Beyond the Standard Model

Classification de thématique: Beyond the Standard Model