Contribution ID: 15

Type: not specified

## Dark Matter Characterisation and interpretation of MET signature at the LHC

Tuesday 13 December 2016 16:20 (15 minutes)

We recast ATLAS and CMS monojet searches for the complete set of dimension 5&6 effective operators involving DM. We demonstrate that DM with different spins give a different energy dependence of the cross-sections and to different distributions of the invariant mass of the DM pair, and consequently to different MET distributions. Using this feature and projecting our results for high luminosity we show that LHC can distinguish some operators and related spin of DM. We have also observed a drastic difference in the efficiencies and LHC discovery potential for large MET cuts depending on DM spin. Methodology aspects of this study relevant to the workshop: a) an important correlations between invariant mass of DM pair, DM spin and the MET shape; b) using this feature in recasting monojet searches for generic class of BSM models; c)  $\chi^2$  approach to distinguish the shape for different models which can be improved further; d) the problem of hitting of the systematic "floor", when the increase of the luminosity does not improve the sensitivity.

Author: Prof. BELYAEV, Alexander (University of Southampton & Rutherford Appleton Laboratory)

Co-author: PANIZZI, Luca (University of Southampton)

Presenter: Prof. BELYAEV, Alexander (University of Southampton & Rutherford Appleton Laboratory)

Session Classification: Interpretation studies

Track Classification: Interpretation studies