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The anatomy of the multi-lepton anomalies at the LHC and the potential connection with other anomalies

Thursday, 29 July 2021 12:45 (15 minutes)

In this presentation an account of the multi-lepton (electrons and muons) anomalies at the LHC will be given. These include the excess production of opposite sign leptons with and without b-quarks, including a corner of the phase-space with a full hadronic jet veto; same sign leptons with and without b-quarks; three leptons with and without b-quarks, including also the presence of a Z. Excesses emerge in corners of the phase space where a range of SM processes dominate, indicating that the potential mismodeling of a particular SM process is unlikely to explain them. A procedure is implemented that avoids parameter tuning or scanning the phase-space in order to nullify potential look-else-where effects or selection biases. The internal consistency of these anomalies and their interpretation in the framework of a simplified model will be presented. Implications on the SM Higgs boson measurements, the muon g-2, astrophysics and other potential deviations from the Standard Model will be discussed.

Apply to be considered for a student ; award (Yes / No)?

No

Level for award;(Hons, MSc, PhD, N/A)?

N/A

Primary author: MELLADO, Bruce (University of the Witwatersrand)

Co-authors: KUMAR, Mukesh (University of the Witwatersrand); RUAN, XIFENG (University of the witwatersrand)

Presenter: MELLADO, Bruce (University of the Witwatersrand)

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