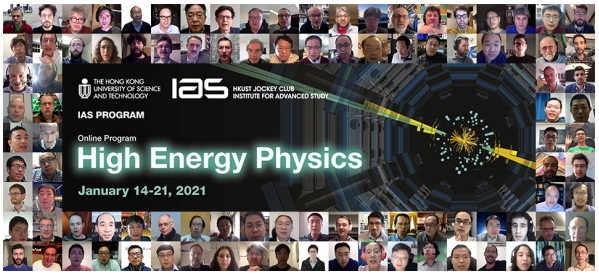

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Status of the multi-lepton anomalies at the LHC and its implications

Based on a number of features from proton-proton collisions taken during Run 1 data taking period at the LHC, a boson with a mass around the Electro-Weak scale was postulated such that a significant fraction of its decays would comprise the Standard Model (SM) Higgs boson and an additional scalar, S. One of the phenomenological implications of a simplified model, where S is treated a SM Higgs boson, is the anomalous production of leptons. A combined study of Run 1 and Run 2 data is indicative of very significant discrepancies between the data and SM Monte Carlos in a variety of final states involving multiple leptons with and without b-quarks. These discrepancies appear in corners of the phase-space where different SM processes dominate, indicating that the potential mismodeling of a particular SM process is unlikely to explain them. The internal consistency of these anomalies and their interpretation in the framework of the original hypothesis is quantified. Implications on the muon g-2 and and astrophysics are also discussed.

Scheduling Preferences

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