

A data-directed search for electron-muon asymmetry in events containing taus

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Lepton flavor is not an exact symmetry of nature as indicated by neutrino oscillations. Moreover, the hints for discrepancy between the measured data and the theoretical prediction of numerous observables related to the ratio between events containing electrons to those containing muons, e.g. $R_{D^{(*)}}$ and R_K , points towards new physics exhibiting lepton non-universality. These examples also demonstrate the role that e/μ asymmetry could play in search for new physics. In this talk, I will present a novel, data-directed paradigm (DDP) to search for new physics. The DDP is complimentary to traditional theory-directed searches that follow the blind-analysis paradigm and could open the door to regions in the data that will otherwise remain unexplored. While the paradigm is generic, I will show that it can be effectively exploited in search for e/μ asymmetries and in particular in events containing in addition to the light lepton also tau leptons.

What is your topic?

Lepton universality and flavour violation

Primary author: BRESSLER, Shikma (Weizmann Institute of Science (IL))

Presenter: BRESSLER, Shikma (Weizmann Institute of Science (IL))

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