

The 2th IOPP Seminar : Dr. Biplab Dey, CCNU, Dec. 26, 2019, Thursday, 10:30 am, Room 9409

Title: Strategies for New Physics Searches with the Upgraded LHCb experiment

Abstract: Over the next decade, the upgraded LHC beauty experiment at CERN, LHCb, is primed to search for new phenomena beyond the Standard Model of particle physics. The upgrade comprises two phases, I and II. The first phase is currently ongoing and an almost brand new LHCb detector will commence data-taking in 2021. The second phase will be geared to the High-Luminosity LHC. In this talk I will describe a two-pronged strategy to search for New Physics at LHCb. First, quantum loop dominated beauty to strange quark decays are especially sensitive to heavy new particles propagating in the loops. Such indirect searches can therefore probe very high mass scales, beyond the reach of direct production at colliders. Second, moderately heavy but very weakly coupled and thereby long lived new particles arise generically in most extensions of the Standard Model, and are excellent dark matter candidates. A new detector, CODEX-b, is being proposed inside the LHCb cavern to search for long lived particles during the High-Luminosity LHC data taking. Along with an overview of the field, I will focus on my own contributions.
