

Seminarium Szkoły Doktorskiej NCBJ

Thursday, 25 November, 9:00

<https://www.gotomeet.me/NCBJmeetings/phd-seminar>

Speaker:

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Title:

Practical Experimental Sensitivity for New Physics Discovery in LHC

Abstract:

Before announcing a discovery in particle physics we need to answer two fundamental questions. Firstly, we should ask ourselves what is the goodness of fit of our result to the tested theory (e.g. the Standard Model). Secondly, we need to check how well our measurement is described by the alternate theory (e.g. Beyond the Standard Model). In other words, we need to establish if our measurement is congruent with the chosen model and find the experimental sensitivity to discovery in the process of hypothesis testing. The sensitivity of an experiment is usually reported as the expected significance. It is typically obtained for a series of hypothesis tests on an ensemble of simulated data.

In my current research work, I am trying to establish the sensitivity of high luminosity experiments such as LHCb to CPT violation (CPTV) measurement with neutral meson oscillations. In this seminar, I will present methods for finding the expected significance with which one would be able to reject different values of CPTV parameter. I will present both the approach employing the Monte Carlo (MC) simulations (computationally expensive) as well as approximate methods allowing us to obtain the expected significance without the need of performing weary MC simulations.