BENEMÉRITA UNIVERSIDAD AUTÓNOMA DE PUEBLA

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"A short overview on Higgs physics at the LHC and LHeC"

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He Higgs boson is the cornerstone of the Standard Model (SM) of Particle Physics. The Large Hadron Collider (LHC) experiments observed a particle with a mass interval of 125-127 GeV and somewhat compatible with the Higgs boson of the SM. However, the SM has to be extended, to resolve major theoretical shortcomings such as Hierarchy problem, in a "Supersymmetric ways"'. The simplest extensions, e.g., Minimal Supersymmetric SM (MSSM) and Next-to-MSSM(NMSSM), leads to presence of multiple Higgs bosons. Even without Supersymmetry, the SM could well be extended simply by adding one or more Higgs doublets -- one such is Type-III 2-Higgs Doublet Model(2HDM-III). The most striking features of this model is that one can look for the flavor--violating signatures of in the Higgs bosons. We shall give a short overview on Higgs boson phenomenology at the LHC and upcoming Large Hadron electron Collider(LHeC) experiments in the above mentioned models in a very pedagogical ways.

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