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The ALICE experiment upgrades for LHC Run III and beyond: contribution from mexican groups

Abstract

Quantum Chromodynamics (QCD) predicts that at high energy densities, ordinary nuclear matter undergoes a phase transition towards a new state of matter called Quark-Gluon Plasma (QGP) that is characterized by deconfined quarks and gluons. High-energy heavy ion (A-A) collisions are used to reach the thermodynamical conditions to recreate the QGP. Proton and heavy ion collisions (p-A) are useful to study the cold nuclear matter effects that can affect the particle production by initial or final-state interactions. Also, particle production measurements in proton-proton (pp) collisions are an essential baseline for the corresponding studies in p-A and A-A collisions.
Among the four main experiments at the LHC, ALICE is the only one that was designed and built to study the QGP in A-A, but its program also includes p-A and pp measurements. During the LHC Long Shutdown II (2019 and 2020), ALICE will undergo a major upgrade. The idea is to fully exploit the large integrated luminosity that will be delivered during the LHC Run III and beyond. Some of these upgrades includes changing detectors or even installing new ones. In this talk I will review the upgrades of the ALICE experiments where the mexican groups are involved.

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