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Title: Big Bang, Little Bang and Mini Bang: Creating Partonic Matter with ALICE at the CERN Large Hadron Collider

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Abstract:

It is believed that the Universe was created almost 13.7 Billion years ago through a process popularly known as Big Bang. In attempts to recreate such a condition in the laboratory, the creation of a deconfined strongly interacting matter of quarks and gluons (partons) has been a frontier in high energy nuclear physics research. The ALICE experiment at the CERN Large Hadron Collider (LHC) has taken data in pp, p+Pb, Xe+Xe and Pb+Pb collisions at the TeV energies to study matter at extreme conditions of temperature and energy densities. It is envisaged that such a deconfined state of partons, called Quark-Gluon Plasma (QGP) is produced in heavy-ion collisions. There are several signatures of QGP, namely, strangeness enhancement, quarkonia suppression, azimuthal anisotropy etc. However, the pp collisions, which was earlier considered as a baseline measurement for heavy-ion collisions, has brought up new challenges and opportunities at the Large Hadron Collider to search for possible droplets of QGP in its high-multiplicity events. In this presentation, we plan to show important signatures of QGP in heavy-ion collisions and their comparison with observations in high-multiplicity pp collisions.