Contribution ID: **26** Type: **not specified**

From Little Bang to Mini Bang: studying the primordial fluid at the LHC

Sunday, 5 January 2020 18:00 (20 minutes)

The primary goal of the ultra-relativistic heavy-ion collision program at the Large Hadron Collider (LHC) is to study the properties of the Quark-Gluon Plasma (QGP), a novel state of strongly interacting matter which exists in the early universe, a few microseconds after Big Bang. Studies of azimuthal correlations of produced particles in ultra-relativistic heavy-ion collision have contributed significantly to the characterization of QGP. Anisotropic flow, which quantifies the anisotropy of the momentum distribution of final state particles, is sensitive to the fluctuating initial conditions and the transport properties of the created medium. The successful description of the measured anisotropic flow coefficients by hydrodynamic calculations suggests that the created medium behaves as a nearly perfect fluid.

In this talk, I will present flow measurements in lead–lead collisions at $\sqrt{s_{\mathrm{NN}}} = 2.76$ and 5.02 TeV and in Xenon–Xenon collisions at $\sqrt{s_{\mathrm{NN}}} = 5.44$ TeV at the LHC. The standard anisotropic flow, as well as the newly developed flow observables will be discussed. In addition, I will show the recent investigations of anisotropic flow in proton–lead at $\sqrt{s_{\mathrm{NN}}} = 5.02$ TeV and proton–proton collisions at $\sqrt{s} = 13$ TeV, to search for a smallest drop of primordial fluid in the universe.

Primary author: Dr ZHOU, You (Niels Bohr Institute)

Presenter: Dr ZHOU, You (Niels Bohr Institute)

Session Classification: submitted talks