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Probing the universe's primordial soup at the LHC

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. Anisotropic flow, which quantifies the anisotropy of the momentum distribution of final state particles, is sensitive to the initial conditions and the transport properties of the created QGP. 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 give an experimental overview of flow measurements in large (Lead-Lead, Xeon-Xeon) and small (Proton-Lead, Proton-Proton) collisions. I will try to address, based on the comparisons of flow measurements and theoretical calculations, what are the properties of the QGP and the possible smallest scale of the QGP.

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