

KMI Colloquium

The quark gluon plasma fluid in high-energy nuclear collisions: How small can it be?



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Wednesday, 26th July, 17:00-
KMI Science Symposia (ES635)

Abstract:

Quark gluon plasma (QGP) is a novel state of matter at extremely high temperature and baryon density. It filled the universe a few micro seconds after the Big Bang. It is also thought to exist deeply inside compact stars. To study its properties, high-energy nuclear collision experiments are conducted at Large Hadron Collider (LHC) in CERN and at Relativistic Heavy Ion Collider (RHIC) in Brookhaven National Laboratory. So far, it turns out the QGP is extremely dense and behaves like a perfect fluid. Firstly, I will give a brief overview of the physics of the QGP in high-energy nuclear collisions at LHC and RHIC. Secondly, I will focus on fluid-dynamical behaviors in various colliding systems including p-Pb at LHC and p/d/He-Au collisions at RHIC, discuss how small the QGP fluid can be, and emphasize its physics consequences.

