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The 162th HENPIC seminar by Dr. Qipeng Hu, from Lawrence Livermore National Laboratory, on Thursday 10:30 am, April 14 (https://lbnl.zoom.com.cn/j/421173735)

Title: Recent heavy-flavor and jet substructure results from ATLAS

Abstract: Latest measurements of heavy-flavor and jet substructure in Pb+Pb collisions from ATLAS are presented in this seminar. Heavy-flavor (charm and bottom) quarks and energetic jets in A+A collisions serve as powerful tools to study quark-gluon plasma (QGP) properties and QGP-induced energy loss.

Nuclear modification factor (RAA) and azimuthal anisotropy of the muons from charm and bottom hadron decays are used to probe the average and differential modifications of heavy-flavor quark production in QGP. The simultaneous measurement of multiple observables for both charm and bottom with the same detector and technique is crucial in providing constraints to state-of-the-art theoretical predictions.

The angular scale of the first hard splitting, rg, inside R=0.4 jet is extracted by employing the soft drop grooming technique. Jet RAA is measured differentially in jet transverse momentum, rg and centrality. The resulting jet RAA strongly depends on rg and centrality but only weakly depends on jet transverse momentum. The strong rg dependence provides direct evidence in support of the picture of jet quenching arising from coherence.

About the speaker: Qipeng Hu joined Lawrence Livermore National Laboratory as postdoc in June 2020. Based on data collected by the ATLAS experiment at the LHC, his primary research focuses on heavy-flavor / jet production in heavy-ion collisions, and collectivity in small systems. Qipeng received his PhD in particle physics from the University of Science and Technology of China in 2017. He was a postdoc at University of Colorado Boulder from 2017 to 2020.