Abstract Submitted
for the FWS17 Meeting of
The American Physical Society

The Design and Performance of the ALICE ITS Upgrade ERICA ZHANG, UC Berkeley, ALICE COLLABORATION — The ALICE (A Large Ion Collider Experiment) detector at the LHC (Large Hadron Collider) was designed to characterize a state of matter known as the QGP (Quark Gluon Plasma) formed in the aftermath of heavy-ion collisions. New detector technologies aim to more accurately measure the physics observables needed to address the many questions concerning the properties of this strongly interacting medium. An upgrade to the current ALICE ITS (Inner Tracking System) is scheduled for the next LHC run in 2021. Consisting of seven layers of silicon pixel detectors, the ITS upgrade will incorporate new MAPS (Monolithic Active Pixel Sensor) technology that reduces the material budget in the interaction region. The upgrade will improve resolution and tracking efficiency, particularly at low transverse momentum. These improvements are necessary to be able to precisely reconstruct the decay vertices of heavy flavor hadrons, which are an effective probe since they are produced in the early stages of the collision and therefore experience the full evolution of this strongly coupled medium. This talk will focus on the detector design and the expected physics capabilities of the ITS upgrade.

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Date submitted: 30 Sep 2017 Electronic form version 1.4