

APR20-2020-001044

Abstract for an Invited Paper
for the APR20 Meeting of
the American Physical Society

20 Years of RHIC and Beyond

LARRY MCLERRAN, University of Washington

The RHIC accelerator has discovered and explored properties of the Quark Gluon Plasma. The equation of state of the Quark Gluon Plasma is tested in measurements of the flow of matter produced in ultra-relativistic nuclear collisions, and its space time evolution by jet-quenching. The central theme of this talk is to describe these accomplishments and their implications. These discoveries have led to rich experimental programs: The Large Hadron Collider, provides extraordinary reach in matter energy density and jet energy. Experiments at RHIC have led to major new ideas concerning interacting gluonic matter such as the Color Glass Condensate that is important for the matter produced at the earliest time in hadronic collisions, and that will be probed in the Electron Ion Collider. Studies of neutron stars, including recent results from the LIGO gravitational wave experiments, have shown that the properties of baryon rich matter change dramatically at a few times nuclear matter density. Such matter may be studied at the NICA and FAIR accelerator facilities and in the RHIC low energy heavy ion runs.