Abstract Submitted for the DNP12 Meeting of The American Physical Society

Development of a Polarized Helium-3 Ion Source for RHIC CHARLES EPSTEIN, RICHARD MILNER, JAMES MAXWELL, Laboratory for Nuclear Science, MIT, JAMES ALESSI, ALEXANDER PIKIN, ANATOLI ZELENSKI, Collider-Accelerator Division, Brookhaven National Laboratory — A polarized Helium-3 beam in RHIC would enable new, unique, high-energy QCD studies of neutron structure with existing polarized proton beams, as well as fundamental tests of the standard model in a future electron-ion collider eRHIC. An MIT-BNL collaboration is developing a polarized Helium-3 ion source for RHIC, and initial construction is underway. Helium-3 atoms will first be polarized through metastability exchange optical pumping and then transferred to the RHIC Electron Beam Ion Source (EBIS). Fully stripped Helium-3 ions would be extracted from EBIS and their polarization measured at low energies before acceleration in RHIC.

Date submitted: 27 Jun 2012 Electronic form version 1.4