Contribution ID: **423** Type: **Parallel contribution**

High-luminosity operation of RHIC and future upgrades

Tuesday, 9 August 2011 14:30 (30 minutes)

The Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory has now operated for a decade. Over this time the 2 physics programs at RHIC, based on heavy ion and polarized proton collisions respectively, have seen a substantial increase in performance and a variety of operating modes. The performance increases are presented with the dominant limiting effects, and upgrade plans for the next decade. The heavy ion luminosity upgrade is primarily based on stochastic cooling in store, and an increase in the longitudinal focusing. A new polarized source is expected to increase both the polarization and luminosity. For the latter electron lenses are also implemented to partially compensate the head-on beam-beam effect. In addition, a number of new operating modes are considered.

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Session Classification: Accelerator Physics

Track Classification: Accelerator Physics