

RHIC UPGRADES AND CAPABILITIES FOR THE NEXT DECADE

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The Relativistic Heavy Ion Collider (RHIC) has two main operating modes with heavy ions and polarized protons respectively. After the completion of major upgrades for both modes, RHIC offers greatly increase luminosities, with the Au+Au luminosity at full energy now at 44x the design value. RHIC also offers all ions species from polarized protons to uranium, including asymmetric combinations, has demonstrated rapid changes between species and energies, and has the unique capability to collide polarized proton with high luminosity. For the next decade, a further increase in the luminosity from the lowest to the highest energies by a factor 2-4 is planned. The largest upgrade under way is an increase of the average Au+Au luminosity at energies below the nominal injection energy by a factor 3-4 for the search of a critical point in the QCD phase diagram. For this the first bunched beam electron cooler is under construction.