



Contribution ID : 401

Type : Oral presentation

## Design of the Electron Ion Collider - eRHIC

*Thursday, 3 July 2014 12:15 (25)*

We present a design of polarized electron - proton/He<sup>3+</sup> and ion collider eRHIC in the present tunnel of the existing Relativistic Heavy Ion Collider (RHIC). Polarized electrons are accelerated up to the maximum energy of 21 GeV with a 1.334 GeV Energy Recovery Linac - ERL using two Non-Scaling Fixed Field Alternating Gradient (NS-FFAG) arcs. 70% polarized protons have an energy range 25-250 GeV, while the light ions (d, Si, Cu) and heavy ions (Au, U) have an energy range 10- 100 GeV/u, while the polarized He-3 ions 17-167 GeV/u. The ions (protons, He<sup>3+</sup>, ions) will be with a reduced emittance obtained by coherent electron cooling. Electron and ion beams collide with an angle of ~10 mrad, with a beta-squeeze of 5 cm luminosities above 10<sup>34</sup> can be reached by using the crab cavities.

### Summary

**Primary author(s)** : Dr. TRBOJEVIC, DEJAN (Brookhaven National Laboratory)

**Co-author(s)** : Dr. BEN-ZVI, Ilan (Brookhaven National Laboratory); Dr. ROSER, THOMAS (Brookhaven National Laboratory); Prof. LITVINENKO, VLADIMIR (Brookhaven National Laboratory); Dr. PTITSYN, Vadim (Brookhaven National Laboratory)

**Presenter(s)** : Dr. TRBOJEVIC, DEJAN (Brookhaven National Laboratory)

**Session Classification** : Accelerator Physics and Future Colliders

**Track Classification** : Accelerator Physics and Future Colliders