IPAC
'23

Contribution ID: **1215** Contribution code: **MOPL011**　　　　　　Type: **Poster Presentation**

Strategy for proton polarization in the Electron Ion Collider

Monday, 8 May 2023 16:30 (2 hours)

The Electron Ion Collier (EIC) will utilize highly polarized electron and ion beams. To preserve polarization through numerous depolarizing resonances over the whole EIC hadron accelerator chain, harmonic orbit correction, partial snakes,horizontal tune jump system and full snakes have been used. A new scheme using skew quadrupoles to compensate horizontal intrinsic resonances is under development. In addition, close attentions have been paid to betatron tune control, orbit control and beam line alignment. The polarization of 60% at 255 GeV has been delivered to experiments with 1.8E11 bunch intensity. For the EIC era, the beam brightness has to be maintained to reach the desired luminosity.This will be achieved by electron cooling at injection of EIC hadron storage ring. Since we only have one hadron ring in the EIC era, existing spin rotator and snakes can be converted to six snake configuration for one hadron ring. The number of snakes can be increased. With properly arranged snakes in EIC and reduction
of emittance, the polarization can reach 70% at 275 GeV. The general strategy of polarization preservation scheme in the injectors and hadron ring of the EIC is described in this paper.

Funding Agency

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary author: HUANG, Haixin (Brookhaven National Laboratory)

Co-authors: HOCK, Kiel (Brookhaven National Laboratory); MEOT, Francois (Brookhaven National Laboratory); MOROZOV, Vasiliy (Thomas Jefferson National Accelerator Facility); PTITSYN, Vadim (Brookhaven National Laboratory (BNL)); RANJBAR, Vahid (Brookhaven National Laboratory); SCHOEFER, Vincent (Brookhaven National Laboratory)

Presenter: HUANG, Haixin (Brookhaven National Laboratory)

Session Classification: Monday Poster Session