



Contribution ID: 1978 Contribution code: MOPC05

Type: **Poster Presentation**

## Local and global betatron coupling correction based on beam position measurements in RHIC

*Monday, 20 May 2024 16:00 (2 hours)*

Local coupling correction in Interaction Regions (IRs) and global coupling correction based on Base-Band Tune (BBQ) measurement have been performed routinely for RHIC operation. However, one still observes significant residual local coupling measured by beam position data. For the Electron-Ion Collider (EIC) project, betatron decoupling for the hadron beam needs to be improved to maintain a large horizontal to vertical beam emittance ratio (12:1). In this paper, we will analyze the cause for noticeable residual coupling in RHIC and propose an integrated local and global betatron coupling correction based on beam position measurements and verify the new scheme with simulation and measurements.

### Footnotes

### Funding Agency

Work supported by Brookhaven Science Associates, LLC under Contract No. DE-SC0012704 with the U.S. Department of Energy.

### Paper preparation format

LaTeX

### Region represented

North America

**Primary author:** LIU, Chuyu (Brookhaven National Laboratory)

**Co-authors:** LEPORE, Brendan (Brookhaven National Laboratory); XU, Derong (Brookhaven National Laboratory); LOVELACE III, Henry (Brookhaven National Laboratory); DREES, Kirsten (Brookhaven National Laboratory); MINTY, Michiko (Brookhaven National Laboratory); LUO, Yun (Brookhaven National Laboratory)

**Presenter:** LIU, Chuyu (Brookhaven National Laboratory)

**Session Classification:** Monday Poster Session

**Track Classification:** MC1: Colliders and other Particle and Nuclear and Physics Accelerators: MC1.A01 Hadron Colliders