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An update on the transition crossing schemes for the EIC hadron storage ring

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The Electron Ion Collider (EIC) Hadron Storage Ring (HSR) requires the crossing of transition for all species except for protons. The current scheme for the Relativistic Heavy Ion Collider (RHIC) utilizes the gamma transition quadrupoles will be adopted for the scheme of the HSR. With rebuilt straight sections, the jump quadrupoles responsible for tune compensation will need to be placed at the proper phase advance to mitigate the beta and dispersion waves generated. As an alternative method, the beam may be nonadiabatically kicked into a stable resonance island to place the beam above transition. This paper discusses transition crossing using the matched first order method and resonance island jump schemes applied to the latest HSR lattice.

Footnotes

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