

RHIC Longitudinal Parameter Revision*,
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The review of the longitudinal parameters during RHIC injection, acceleration, transition crossing, rebucketing and storage for gold and proton beams pointed to the need for revisions of the Design Manual baseline, with the new target values presented in this report. It was concluded that bunch rotations are needed in the AGS for gold as well as proton operations before the beams are injected into RHIC. For gold operation with nominal intensity, the acceptable range of 95% longitudinal bunch area is from 0.2 to 0.5 eVs/u at injection, in comparison to the previous baseline value of 0.3 eVs/u. Intra-beam scattering at injection and complications at transition will cause growth in longitudinal bunch size, resulting in increased bunch area before rebucketing. Consequently, at the upper limit of 0.5 eVs/u a beam loss of about 3% is expected during rebucketing. The transfer from RHIC acceleration system to storage system is preferably performed at top energy to minimize possible sudden beam loss. For proton operation, the requirement on the initial bunch area is relaxed from the previous 0.3 eV/s to 0.5 eV/s. In either case, the change in collision performance is insignificant.

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