



Contribution ID: 456 Contribution code: MOPS004

Type: **Poster Presentation**

Longitudinal hollow electron beam

Monday 2 June 2025 16:00 (2 hours)

The intra-beam scattering in high charge state intense heavy ion beams is a problem worth considering. With the help of controlling the longitudinal distribution of the ion beam, it may be possible to alleviate the ion beam loss and to improve the ion beam lifetime caused by intra-beam scattering. Unlike the traditional cooling process of direct current electron beams or longitudinal uniform distribution electron beams, a longitudinal hollow electron beam is used to cool heavy ion beams. Ions at the edge of the ion beam will receive stronger cooling, while ions at the center of the ion beam will receive weaker cooling, avoiding overcooling at the center of the ion beam. This paper discusses the generation, measurement, and related issues of longitudinal hollow electron beams. Corresponding solutions and suggestions have been proposed for the problems and challenges that may be encountered in the research. The cooling process of longitudinal hollow electron beams will be simulated and experimentally studied in the further, with the hope of obtaining beneficial effects.

Footnotes

Paper preparation format

Word

Region represented

Asia

Funding Agency

Work supported by NSFC No. 12275325, 12275323, 12205346.

Author: YANG, Xiaodong (Institute of Modern Physics, Chinese Academy of Sciences)

Presenter: YANG, Xiaodong (Institute of Modern Physics, Chinese Academy of Sciences)

Session Classification: Monday Poster Session

Track Classification: MC1 :Colliders and Related Accelerators: MC1.A11 Beam Cooling