

Modeling beam dynamics in the HELIAC Advanced Demonstrator

Tuesday 27 August 2024 16:00 (2 hours)

A crucial milestone towards the final expansion stage of the HELIAC (Helmholtz linear accelerator at HIM & GSI) is the commissioning of the first fully equipped cryomodule, the so-called Advanced Demonstrator. The cryomodule comprises three accelerating superconducting crossbar H-mode cavities, a buncher and two superconducting solenoids. For modelling the beam dynamics of the Advanced Demonstrator test setup, the actual 3D electromagnetic field distributions of the cavities and solenoids are used. The digital model was paired with beam-based measurements of the longitudinal and transverse beam density distribution to calculate the realistic beam propagation along the 20 m setup. The beam dynamics insights gained during the cryomodule commissioning are presented.

Footnotes

Funding Agency

Primary author: LAUBER, Simon (Helmholtz Institut Mainz)

Co-authors: BURANDT, Christoph (Helmholtz Institut Mainz); DZIUBA, Florian (Helmholtz Institut Mainz); VORMANN, Hartmut (GSI Helmholtzzentrum für Schwerionenforschung GmbH); LIST, Julian (Helmholtz Institut Mainz); MISKI-UGLU, Maksym (GSI Helmholtzzentrum für Schwerionenforschung GmbH); KALLEICHER, Robin (Helmholtz Institut Mainz); YARAMYSHEV, Stepan (GSI Helmholtzzentrum für Schwerionenforschung GmbH); KUERZEDER, Thorsten (GSI Helmholtzzentrum für Schwerionenforschung GmbH); SCHEELER, Uwe (GSI Helmholtzzentrum für Schwerionenforschung GmbH); BARTH, Winfried (GSI Helmholtzzentrum für Schwerionenforschung GmbH)

Presenter: VORMANN, Hartmut (GSI Helmholtzzentrum für Schwerionenforschung GmbH)

Session Classification: Tuesday Poster Session

Track Classification: MC1: Beam Dynamics, Extreme Beams, Sources and Beam-Related Technologies; MC1.1 Beam Dynamics, beam simulations, beam transport