



Contribution ID: 802 Contribution code: THPL102

Type: **Poster Presentation**

Reconstruction of the transverse electron beam profile using an interferometric beam size monitor

Thursday, 11 May 2023 16:30 (2 hours)

The transverse size of the electron beam in a storage ring can be measured using the synchrotron radiation of a bending magnet. Due to the diffraction limit, many facilities exploit beam size monitors in the X-ray regime. On the other hand, the visible part of the emitted radiation delivers spatial information via an interference pattern after passing through a double slit. Assuming a Gaussian beam distribution the size of the beam can be easily obtained with an analytical formula. If this assumption is not fulfilled, the calculated beam shape will vary from the real distribution. This can appear for instance in case of exotic beam optics settings or complicated filling patterns, that are widely used in modern storage-ring-based light sources. In this paper the idea to reconstruct the electron beam distribution by measuring the absolute visibility and its phase with a spectral-resolved set-up is introduced.

Funding Agency

Work supported by German Bundesministerium für Bildung und Forschung, Land Berlin, and grants of Helmholtz Association

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary author: SHMIDT, Irma (Helmholtz-Zentrum Berlin)

Co-authors: HWANG, Ji-Gwang (Helmholtz-Zentrum Berlin für Materialien und Energie GmbH); SCHIWETZ, Gregor (Helmholtz-Zentrum Berlin für Materialien und Energie); JANKOWIAK, Andreas (Humboldt-Universität zu Berlin)

Presenter: SHMIDT, Irma (Helmholtz-Zentrum Berlin)

Session Classification: Thursday Poster Session

Track Classification: MC6: Beam Instrumentation, Controls, Feedback and Operational Aspects: MC6.T03: Beam Diagnostics and Instrumentation