



Contribution ID: 1649 Contribution code: THPS20

Type: **Poster Presentation**

A new cryogenic permanent magnet undulator at BESSY-II: The CPMU-20

Thursday, 23 May 2024 16:00 (2 hours)

We discuss the design and properties of a proposed planar cryogenic permanent magnet undulator with 20 mm period length called CPMU-20. The undulator is set to use (Pr,Nd)₂Fe₁₄B as permanent magnet material and Permendur poles and is set to be part of the planned SoTeXS beamline at the BESSY-II upgrade which will offer a unique working environment for research into energy-materials –especially energy-storage materials. The CPMU-20 is designed to produce high photon fluxes in the energy range of 0.5 to 5 keV with a maximum K-value of 2.2 which permits research into a wide range of materials used in state of the art batteries. The optimization process that led to the specific device properties like the period length, the width of the poles and the end-magnet configuration –which ensures an aligned electron beam through the device for the whole gap-range from 6 to 22 mm - will be presented in detail. This includes a discussion of the usage of the UNDUMAG and WAVE software written by Michael Scheer for the optimization and simulations.

Footnotes

Funding Agency

Paper preparation format

LaTeX

Region represented

Europe

Primary author: SCHÄFER, Stefan (Helmholtz-Zentrum Berlin für Materialien und Energie GmbH)

Co-authors: MESECK, Atoosa (Johannes Gutenberg University Mainz); RIAL, Ed (Helmholtz-Zentrum Berlin für Materialien und Energie GmbH); SCHEER, Michael (Helmholtz-Zentrum Berlin für Materialien und Energie GmbH)

Presenter: SCHÄFER, Stefan (Helmholtz-Zentrum Berlin für Materialien und Energie GmbH)

Session Classification: Thursday Poster Session

Track Classification: MC7: Accelerator Technology and Sustainability: MC7.T15 Undulators and Wigglers