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Wakefield studies of the taper section of the elliptical in-vacuum undulator - IVUE32

Tuesday 3 June 2025 16:00 (2 hours)

The elliptical in-vacuum undulator (IVU) IVUE32 is being developed at Helmholtz-Zentrum Berlin (HZB). The APPLE-II design allows for not only gap changes but also longitudinal shift movements, putting additional design challenges on the tapers at the entrance and exit of the undulator. The chosen design philosophy separates the gap and shift movement compensation into two assemblies respectively. This approach allows for a solid foil taper as gap movement compensation, which is proven in previously commissioned planar IVUs e.g. CPMU17 at HZB. The shift movement compensation, which requires a slit foil, can be kept parallel. The proximity of this complex structure to the electron beam makes the device susceptible to wakefield effects which can influence beam stability. Investigating and understanding these effects is vital for accelerator operation. The taper design will be presented alongside wakefield simulations and model measurements.

Footnotes

Paper preparation format

LaTeX

Region represented

Europe

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