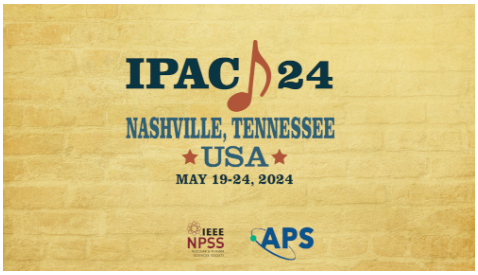

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Slice energy spread measurements of a 20 MeV electron beam at PITZ

Wednesday, 22 May 2024 16:00 (2 hours)

Due to improvements of the performance of FELs, the measurements of the beam's slice energy spread is becoming increasingly important for optimization of the brightness. Of particular interest are measurements of the uncorrelated energy spread near the gun as this determines the lower limit of the energy spread for the rest of the machine. At the Photo Injector Test facility at DESY in Zeuthen (PITZ), the uncorrelated energy spread is measured of an electron beam generated from an L-band electron gun and accelerated to 20 MeV with a booster cavity. The energy spread of the central time slice is measured using a transverse deflecting structure (TDS) and a dispersive arm to image the longitudinal phase space. Scans of the TDS voltage and quadrupole strengths are used to remove the contributions from the TDS, transverse emittance, and imaging resolution. Presented is an overview of the measurement procedure, resolution, and results of measurements tests.

Footnotes

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