

Reconstruction of the longitudinal phase space for short electron bunches

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The Split Ring Resonator is a novel tool for longitudinal beam diagnostics of short bunches. The small metal device is a THz-driven resonator which creates a strong, vertical oscillating electro-magnetic field. This allows a time dependent streaking of an electron bunch with a frequency of around 300 GHz. The device is being installed and tested in FLUTE at KIT. The vertical streaking combined with the dispersive effect of a spectrometer leads to looped screen images. These screen images allow the reconstruction of the longitudinal phase space of the bunch. This talk presents the working principle of the reconstruction of the longitudinal phase space of short bunches based on this diagnostic device, the experimental setup at FLUTE and the current challenges in the application.

Summary

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