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4D coupled transverse phase space investigations at PITZ

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Measurements of the transverse phase space are crucial for characterizing the performance of the electron gun in a photo injector. At the Photo Injector Test facility at DESY in Zeuthen (PITZ), the 2D x and y phase spaces are separately measured with a slit-screen emittance scanner directly after the RF booster where the energy is ~20 MeV. These 2D measurements can then combined with post processing using the Virtual Pepper Pot (VPP) method to reconstruct the 4D transverse phase space. Analyzing recent phase space measurements at PITZ with the VPP revealed significant x-y coupling. Presented here are investigations of the source and mitigation of the 4D coupling.

Summary

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