

ACCELERATOR SEMINAR

“Studies on Charge Production at the DESY Photo Injector Test Facility”

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The photoinjector test facility (PITZ) at DESY, Zeuthen site, is dedicated to the development and optimization of high-brightness electron sources for the X-FEL and FLASH free electron lasers. World-record low emittance was demonstrated in 2012 from an L-band normal conducting RF gun with a Cs₂Te photocathode. However, measured emittance and produced bunch charge do not agree with computer simulations, despite direct plug-in of experimental parameters. The relationship between the amount of produced charge for high laser pulse energies close to the space charge limited emission regime seems to be proportional to the amount of halo inherently present in the radial laser profile even though charge from the core has saturated. By using core + halo particle distributions based on measured radial laser profiles, agreement is now obtained between experimentally produced charge, ASTRA and semi-analytical emission models for a wide range of RF gun and laser operational parameters within the measurement uncertainties.

Thursday, August 13, 2015

11:00 a.m.

CEBAF Center, Room L102