Joint DESY and University of Hamburg Accelerator Physics Seminar

Tuesday, June 22-nd 2010

(16:00 in Room 459/30b)

Experimental Investigations on the Influence of the Photocathode Laser Pulse Parameters on the Electron Bunch Quality in an RF Photoelectron Source
(PhD defense)

Marc Hänel

Uni–HH / DESY

Abstract

Free Electron Lasers like the future European XFEL require electron bunches of extremely high quality with a low normalized transverse emittance of the order of 1 mm mrad. These electron bunches are generated in an RF photoelectron gun cavity. Here, the electrons are emitted from a Cs_2Te photocathode using a proper laser system. Since the response time of the photocathode material is short, the final electron bunch properties can be influenced by adjusting the laser pulse characteristics. In this talk, the fundamental interdependencies between temporal and spatial laser pulse properties and the resulting electron bunch quality are presented.

J.Roßbach (Univ. HH) and M.Vogt (MPY).