

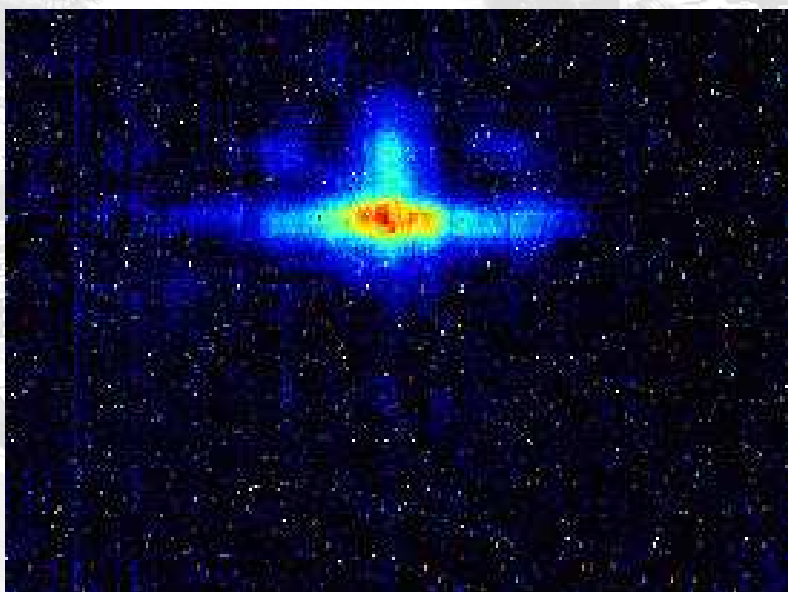
GFA and SwissFEL Accelerator Seminar

Optical Replica Synthesizer and XFEL Laser Heater

Monday, 15. August 2011, 16.00 h, WBGB/019

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Manipulating ultra-bright electron bunches with an external laser has many attractive applications, both for diagnostic purposes and to shape beam properties. In this talk I discuss two projects in which Uppsala University was involved: the optical replica synthesizer experiment and the XFEL laser heater. The optical replica falls in the first category and is used to analyze the longitudinal beam profile of the sub-ps long bunches in FLASH at DESY. Here the electron bunch is stimulated by an external laser to emit a light pulse with the same longitudinal profile as the electron bunch that is subsequently analyzed with femto-second laser diagnostic methods (FROG). I will discuss the experiments and perspective. The XFEL laser heater falls in the second, beam shaping, category where an external laser is used to increase the incoherent momentum spread of the electrons in order to prevent micro-bunching instabilities in the bunch compressors and the acceleration sections. I will discuss the current state of the design work.

