Request for a DESY Summer Student in 2013

Name : Steffen Wunderlich   email : steffen.wunderlich@desy.de

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DESY-Group/Experiment : FLA-FEL

Short description of the project the student should work on :

Generation of THz radiation with femtosecond laser pulses in ambient air

Terahertz (THz) radiation with wavelengths in the mid- and far-infrared regime is used at the Free-Electron Laser in Hamburg (FLASH) for longitudinal electron bunch diagnostics. A laser-driven source of THz pulses, which is independent from the accelerator facility is expected to be a valuable tool for the development and commissiong of novel detection techniques for applications e,g, at a free-electron laser.
The generation process in ambient air is based on the frequency mixing of the fundamental frequency of intense laser pulses of femtoseconds length and the second harmonic produced e.g. in a non-linear crystal.
The goal of this project is to set up a THz source based on laser pulses, to characterize the pulses with spectroscopic techniques and the application on detector systems which are going to be used at FLASH.
The summer student is going to work in a laser laboratory with state-of-the-art laser and detector systems supervised by experienced PhD students. The summer student should be highly motivated for 'hands-on' work in the laboratory, but needs to have only basic knowledge of fundamental optics and laser physics.

Physics / Computing/ Engineering Content of the project :

Optics, laser physics, accelerator physics

Special Qualifications expected from the student (Computing,...) :

Motivation for 'hands-on' work in a laser laboratory, basic knowledge in optics

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Other remarks :

The applicant must be of age due to safety regulations.

Supervisor(s) during the project (16/07/13 - 5/09/13) :

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