



HRVOJE PETEK 'Probing and control of ultrafast electron dynamics in metals by ultrafast nonlinear photoemission spectroscopy and microscopy'

Prof. HRVOJE PETEK
Department of Physics and Astronomy
Co-Dire

July 07, 2008

Seminar, July 7th, 12:00. Seminar Room

Prof. HRVOJE PETEK

Department of Physics and Astronomy

Co-Director

Petersen Institute of NanoScience and Engineering

Editor-in-Chief, Progress in Surface Science

University of Pittsburgh

USA

Excitation of a metal surface by ultrafast near UV femtosecond laser pulses can drive multiphoton transitions through the single particle and collective excitation modes. Time-resolved photoemission spectroscopy on noble metal surfaces reveals the different excitation pathways that lead to 2-4 photon transitions. By controlling the phase between the identical pump and probe pulses, we can demonstrate coherent control of the multiphoton excitation process. Specifically, we demonstrate the coherent control of spin polarization in copper by the selective excitation of the spin-orbit split d-bands. Furthermore, with a photoemission electron microscope, we image the surface plasmon dynamics in silver metal films. By fabricating simple surface plasmon coupling structures, we study a variety of plasmon optical elements.

Seminar, 7th of July, 12:00h. Conference Room

Hosted by Prof. Niek van Hulst