

CNRS-SOLEIL Synchrotron
L'Orme des Merisiers , Saint Aubin
91192 Gif sur Yvette
France

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Electronic properties of solids excited with intermediate laser power densities. FAUSTO SIROTTI, None, TEMPO BEAMLINE TEAM — Intermediate laser power density up to about 100 GW/cm² is below the surface damage threshold is currently used to induce modification in the physical properties on short time scales. The absorption of a short laser pulse induces non-equilibrium electronic distributions followed by lattice-mediated equilibrium taking place only in the picosecond range. The role of the hot electrons is particularly important in several domains as for example fast magnetization and demagnetization processes [1], laser induced phase transitions, charge density waves. Angular resolved photoelectron spectroscopy measuring directly energy and momentum of electrons is the most adapted tool to study the electronic excitations at short time scales during and after fast laser excitations. The main technical problem is the space charge created by the pumping laser pulse. I will present angular resolved multiphoton photoemission results obtained with 800 nm laser pulses [2] showing how space charge electrons emitted during fast demagnetization processes can be measured.

[1] N. Beaulieu et al. Journal of Electron Spectroscopy and Related Phenomena, 2013, 189 Supp: 40–45

[2] F. Sirotti et al. Physical Review B. 2014, 90(3): art.n035401

Fausto Sirotti
None

Date submitted: 06 Nov 2015

Electronic form version 1.4