
O 9: Invited Talk (Walter Pfeiffer)

Time: Monday 14:00–14:45

Location: TRE Phy

Invited Talk

O 9.1 Mon 14:00 TRE Phy

Ultrafast nanooptical control — •WALTER PFEIFFER¹, TOBIAS BRIXNER², and MARTIN AESCHLIMANN³ — ¹Fakultät für Physik, Universität Bielefeld, Universitätsstr. 25, 33615 Bielefeld, Germany — ²Institut für Physikalische und Theoretische Chemie, Universität Würzburg, Am Hubland, 97074 Würzburg — ³Fachbereich Physik and Research Center OPTIMAS, Technische Universität Kaiserslautern, Erwin-Schrödinger-Str. 46, 67663 Kaiserslautern

The most general investigation and exploitation of light-induced processes require simultaneous control over spatial and temporal properties of the electro-magnetic field on a femtosecond time- and nanometer

length-scale. Based on the combination of polarization pulse shaping and time-resolved two-photon photoemission electron microscopy we demonstrate such control over nanoscale spatial and ultrafast temporal degrees of freedom of an electromagnetic excitation in the vicinity of a nanostructure. The present status of nanooptical control is reviewed, different control mechanisms are demonstrated, and the prospects of open-loop control of particular nanophotonic excitations are discussed. The flexible simultaneous control of temporal and spatial properties of nanophotonic excitations opens new possibilities to tailor and optimize the light-matter interaction in spectroscopic methods as well as in nanophotonic applications.