



University of Crete
Department of Physics

40 Years Anniversary Colloquium Series

Thursday, 29 November 2018 | 17:00 – 18:00, Seminar Room, 3rd floor

Watching and clocking electrons in condensed matter with visible light

Prof. Eleftherios Goulielmakis

Institute of Physics University of Rostock, Germany

Max Planck Institute of Quantum Optics, Germany

ABSTRACT

The wavelength of visible light is often assumed to impose fundamental limits in the visualization of the microcosm in space and time. In optical microscopies it constrains the spatial resolution to the nanometer scale while in time-resolved techniques it restricts the temporal resolution to the scale of femtoseconds. I will discuss how recent efforts in the science of light allow us to push these frontiers. We will show that precisely sculpted and measured light fields allow taking pictures of valence electrons in solids with sub-Angstrom resolution as well as for tracking of their dynamics in real time with attosecond precision. These capabilities open the way to establishing a new generation of tools for peering into and controlling of the microcosm at the level of electrons.