Contribution ID: **23** Type: **Talk**

Single-shot electron imaging of NIR-induced He nanoplasmas

Friday 16 February 2018 12:00 (20 minutes)

Nanoplasmas formed from doped helium nanodroplets by irradiation with intense near-infrared fs-pulses feature peculiar properties. A helium ionization avalanche is triggered by tunnel ionization of the dopant cluster at comparatively low light intensities (~1014 W/cm2). Subsequent light absorption is enhanced by resonances due to nanoplasma anisotropies [PRL 107, 173402 (2011)] and expansion [NJP 14 075016 (2012)]. Consequently, dopant and helium atoms charge up to high charge states [J. Mod. Opt. 64, 1061 (2017)], and energetic ions and electrons are emitted by Coulomb explosion. Surprisingly, our single-shot velocity-map images of nanoplasma electrons display sharp electron energies peaked at ~eV energies. We discuss the systematics of electron and ion spectra, as well as possible interpretations based on classical MD simulations.

Primary authors: HEIDENREICH, A. (Euskal Herriko Unibertsitatea and Donostia International Physics Center, Donostia; IKERBASQUE, Basque Foundation for Science, Bilbao); SCHOMAS, D. (Universität Freiburg); MUDRICH, Marcel (Aarhus University); CAMUS, N. (MPI für Kernphysik, Heidelberg); RENDLER, N. (Universität Freiburg); MOSHAMMER, R. (MPI für Kernphysik, Heidelberg); PFEIFER, T. (MPI für Kernphysik, Heidelberg)

Presenter: MUDRICH, Marcel (Aarhus University)

Session Classification: Strong-field ionization

Track Classification: Contributed talk