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Type: Talk

Coherent Control and Multicolor Synthesis at FERMI

Thursday 15 February 2018 09:00 (40 minutes)

The generation of intense, multicolor fields in the extreme ultraviolet spectral range at Free Electron Lasers (FELs) opens new perspectives for the characterization and control of nonlinear processes in atoms and molecules. In particular, these sources give access to the high intensities required for the observation and investigation of nonlinear processes, and, using suitable delay lines, they can be used for the implementation of XUV-pump-XUV-probe experiments.

The seeded FEL FERMI (Trieste, Italy) offers the possibility to synthetize multicolor coherent fields, whose amplitudes and relative phases can be independently controlled. Recently the first experiment demonstration of the coherent control of the photoionization process in neon atoms was reported [1]. In the temporal domain, the coherent superposition of two or more coherent harmonics leads to a complex temporal structure, whose characteristics depend on the relative phases between the harmonics.

I will describe future perspectives on the synthesis and temporal characterization of multicolor fields in the XUV and X-ray spectral range using FELs.

References [1] K. Prince et al Nature Phot. 10, 176-179 (2016).

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