

アト秒量子ダイナミクスセミナー

日時：2019年2月26日（火）15:00-16:00

場所：東6号館5階529セミナー室

15:00-16:00 Dr Marcelo Fabian Ciappina,
ELI Beamlines Project Division, The Czech Academy of Sciences

“Attosecond Physics at the Nanoscale: the ultimate frontier Polarization analysis of high harmonic generation in crystalline solids”



Abstract: Recently two, a priori, different branches of physics have started to merge. One is attosecond physics, that deals with, both theoretical and experimentally, the phenomena which take place when ultrashort laser pulses, with durations ranging from the attosecond to the femtosecond time scale, interact with atoms, molecules or solids. The laser-induced electron dynamics occurs natively at an attosecond time scale, where e.g. the period of a classical electron in a hydrogen atom is 152 as, and consequently, the underlying physics requires tools employing attosecond time resolution (both in theory and

experiments). This subject has reached great maturity on the basis of well-established theoretical developments and the understanding of different nonlinear phenomena, as well as thanks to the formidable advances in experimental techniques. Nowadays, for instance, measurements with attosecond precision are routinely performed in several facilities around the world. The second branch involves the manipulation and engineering of mesoscopic systems, e.g. solids, metals, dielectrics, with nanometric precision, a scale that was only reached recently. In this way, it is possible to design and build bulk matter samples which pave the way to study light-matter interaction in a completely new regime. In this seminar I'll summarize the theoretical work we have done to tackle the underlying physics of laser-matter processes driven by spatially and temporal synthesized fields, with a main emphasis in above-threshold ionization (ATI) and high-order harmonics generation (HHG) in atoms and molecules induced by plasmonic fields.

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