



**22<sup>nd</sup> November 2018 - 10:00 h**  
**CFEL – Building 99, seminar room II+III (ground floor)**

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### Ultrafast photoelectron spectroscopy with TDDFT: state of the art and perspectives

The current trend of ultrafast molecular imaging based on strong-field photoelectrons spectroscopy leans towards molecules with increasing size and complexity that gradually fall beyond the scope of the standard modeling approaches (SFA, TDSE, etc.) that made the success of the field. Indeed, as the size of the target molecule grows, the role that the electron-electron interaction plays in the dynamics is increasingly important; a fact that in turn worsens the quality of the widely spread single-active (or independent particles) approximation which lays at the core of many theoretical approaches.

To overcome this limitation we have developed a technique based on time-dependent density functional theory (TDDFT) designed to calculate ab-initio (i.e. with no free parameters), photoelectron spectra generated under any combination of laser fields and that is suitable to describe a large variety of many-electron systems.

In this talk I will present the theory together with an overview of the possible scenarios where it can be successfully employed.

