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SEMINAIRE
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"ELECTRONIC AND VIBRATIONAL RELAXATION DYNAMICS IN MOLECULAR SYSTEMS INVESTIGATED WITH FEMTOSECOND UV SPECTROSCOPIES"

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Résumé:

Over the last years, femtosecond UV spectroscopy has taken a giant leap forward and now transient absorption, time gated emission, resonant Raman and four-wave mixing set-ups are available down to l = 250 nm.

Innumerable molecular systems with optical transitions in the near- and deep UV regions (200-400 nm) can now be investigated with real-time techniques or manipulated with optical coherent methods. This is by itself an extraordinary breakthrough that heralds an increasing interest in these techniques. Nevertheless their unique added value stems from the possibility to use as probes a variety of UV chromophores, most of them containing aromatic mono- or oligo-cyclic organic groups, for example aromatic amino acids, nucleotide bases, imides and (di-)imines. These species are constituents of bio-molecules, many molecular devices and supra-molecular structures. Exploiting them as a probe opens a new window on the (thermo)dynamical properties of the macromolecule edifice in a site-specific fashion. They provide dynamical information on intramolecular electrostatics, fluctuations and local rigidity, structural changes, anharmonic coupling and long-range interactions as well as vibrational and electronic coherences.

I will illustrate these capabilities of femtosecond UV spectroscopy with few examples from my recent research activity and literature.

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