Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Seminar

Light-Matter Interaction Driven by Ultrashort Pulses in the Extreme-Ultraviolet Domain

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The advent of high-order harmonic generation (HHG) based table top sources providing coherent, ultrashort pulses in the extreme ultraviolet (XUV) domain has opened up many new avenues to study the dynamics of electrons in their natural lifetimes of a few attoseconds (1as = 10^{-18} seconds). Here, I will discuss how attosecond interferometry can be used to interrogate the effects of molecular shape and symmetry on ultrafast photoionization processes. Similar to the table top HHG sources, large-scale user facilities such as free-electron lasers (FELs) also provide ultrashort, coherent XUV pulses, albeit with very high intensity (> 10^{14} W/cm^2). This can allow us to drive Rabi oscillations in two-level atomic systems, leading to the formation of "atom + photon" dressed states in the XUV wavelength. By controlling the nature of the dressed states via the intensity of the XUV-FEL pulses, we generated quantum entanglement in hybrid light-matter systems across ultrafast timescales.

Friday, Aug 9th 2024

11:30 Hrs (Tea / Coffee 11:15 Hrs)

Seminar Hall, TIFR-H