

Seminar

Photo physics of quantum aggregates in Helium Nano droplets: from correlated decay processes to Nano plasmas

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With the advent of advanced current and next generation light sources such as free-electron lasers and attosecond light pulses in the extreme ultraviolet (EUV), soft- and hard-xrays, the need to understand multielectron processes in individual atoms and atomic aggregates becomes increasingly important. These processes have also been recognized as primary and critical steps radiation damage in large, yet loosely bound, molecular edifices such as the primordial DNA molecules. In particular, van der Waals aggregates in the form of rare-gas clusters doped with other atoms or molecules present an ideal test case for unearthing and understanding multielectron quantum dynamics which ensues after a single photon, often in the EUV or soft-xray, is absorbed. We use He nanodroplets, quantum fluids in a superfluid state as 'private cryostats' which host alkali clusters on them. Following the absorption of a soft-xray photon by the He host, intriguing quantum dynamics, hitherto unseen and, perhaps, unforeseen occurs. In this talk, we will present the results of recent work done at the Elettra synchrotron using electron-ion multiple coincidence spectroscopy along with our current understanding of the underlying mechanism of the quantum dynamics. This work motivates further investigations using free-electron lasers and attosecond pulses in such systems.

Thursday, Jul 18th 2019

11:30 AM (Tea/Coffee at 11:00 AM)

Auditorium, TIFR-H