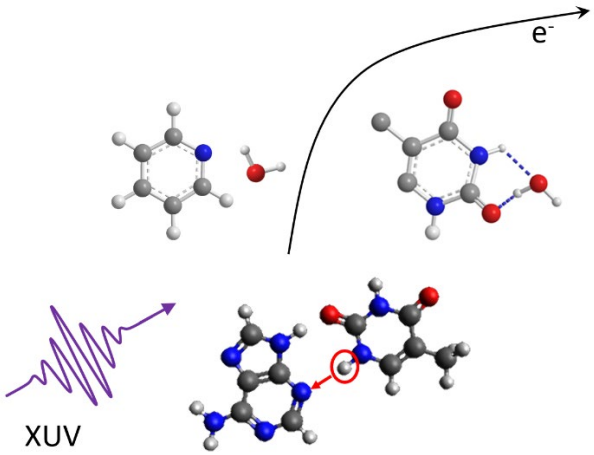
Physikalisches Institut
Fakultät für Mathematik und Physik
Albert-Ludwigs-Universität Freiburg

PHYSIKALISCHES KOLLOQUIUM

AM 28. APRIL 2025 UM 16 UHR C.T.
IM GROßEN HÖRSAAL



PHOTOIONIZATION AND PHOTOELECTRON SPECTROSCOPY OF WEAKLY-BOUND MOLECULAR COMPLEXES

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Many processes relevant to our everyday life depend on some level on intermolecular interactions between a molecule and its environment. Such interactions govern for example the conformation and functionality of large biomolecules, determine the energetics of chemical reaction pathways or enable charge transfer and transport in optoelectronic devices.
Photoelectron spectroscopy of small neutral molecular complexes using extreme ultraviolet radiation can provide information on intermolecular interactions and allows to study processes enabled by the environment. At the same time, the small system size allows to avoid negative effects due to the scattering of photoelectrons that can reduce the level of detail observable in larger environments. In my talk I will discuss the challenges of such measurements and discuss possible experimental approaches. Besides general concepts, I will give specific examples of how photoelectron photoion coincidence spectroscopy can be used to obtain information on selected molecular complexes and the dynamical processes enabled by the limited molecular environment. In the end I will discuss possible extensions of this methodology towards time-resolved measurements on weakly-bound complexes.

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