

SPP 1929 – Seminar

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Universität Hamburg
Seminarraum
Zentrum für optische Quantentechnologien
Luruper Chaussee 149, Gebäude 69, 22761 Hamburg

Matthew Eiles

(Max Planck Institute for the Physics of Complex Systems)

Atom-electron collisions in negative ion photodetachment and Rydberg molecule photoassociation

In this talk I will discuss two recent developments in the (now nearly century old) field of electron-atom collisions. Recent experiments using alkali atoms in two very different contexts - ultracold Rydberg matter and negative ion photodetachment - have motivated a study spanning many orders of magnitude in the collision energy, from a few micro-electron volts to almost the first ionization threshold. I will present the results of a study of heteronuclear Rydberg molecules, which possess diverse and experimentally interesting properties depending on the low-energy scattering parameters and details of the Rydberg spectra. Following this, moving to much higher electron energies, I will present a study of the partial cross sections of negative ion photodetachment. A series of surprising laboratory observations reveal a novel transition between threshold behavior as the photon energy and angular excitation of the interacting electrons increase.