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Bennet Krebs

AG Clusters and Nanostructures

Phase-of-the-phase electron momentum spectroscopy on single metal atoms in helium nanodroplets

Magnesium atoms fully embedded in helium nanodroplets are exposed to two-color laser pulses in order to exemplarily study the contribution of a dense and finite medium on multiphoton-triggered above-threshold ionization (ATI). The angular-resolved photoelectron spectra show striking differences with respect to results obtained on free atoms. Scattering of the Mg photoelectrons, when traversing the helium environment, causes the angular distribution to become almost isotropic. Furthermore, we observe a marked increase in the ATI order, pointing out the impact of the helium environment on the concerted electron emission process. Phase-of-the-phase spectroscopy, however, reveals a marked loss in the 2ω - ω phase dependence of the electron signal. Taking into account sideband formation on a quantitative level, a Monte-Carlo simulation which includes laser assisted electron scattering can reproduce the experimental spectra and give insights into the strong field-induced electron emission from disordered systems.

Talk: English

Slides: English

Location: Online, <https://bbb-greenlight.uni-rostock.de/b/ann-h9j-p4h-mlp>