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AG Quantum Theory and Many-Particle Systems

Photoelectron Spectra with Quantum Trajectories beyond the Strong-Field Approximation

The Strong-Field Approximation (SFA) is the theoretical work-horse of strong-field physics. Its beauty, apart from successfully predicting many different strong-field phenomena, lies in the possibility to interpret the results in terms of trajectories. However, in the plain SFA the influence of the binding potential is neglected after the ionization step. In recent years more and more effects have been found that are beyond the scope of the SFA, e.g. the low, very low and zero energy structures. Extending the SFA to reproduce such effects is a widespread approach towards a better understanding of strong-field physics.

In this talk I will present three different cases where the SFA is extended to include external potentials by using quantum trajectories, namely emission of high energy electrons from laser-irradiated clusters, increased probability of direct electron emission at the momentum cutoff and counter-intuitive non-dipole effects. I will also demonstrate how the formulation in terms of trajectories allows for deeper insight into the mechanism behind the effects under consideration.

Talk: German
Slides: English

Location: Institute of Physics, Albert-Einstein-Str. 24, HS1