Recollision Scenario Without Tunneling: Role of the Ionic Core Potential

A T Uzer

1School of Physics, Georgia Institute of Technology, 30332-0430, Atlanta GA, USA
Contact Email: tuzer@gatech.edu

We present a purely classical recollision scenario, i.e., without tunneling, which, in contrast to the standard three-step model, takes into account the ionic core potential fully at all stages of the recollision process and is valid at all intensities. We find that a key periodic orbit drives the recollisions by guiding electrons away and back to the core. At sufficiently high intensity, we connect our scenario to the three-step model, and explain why the three-step model leads to good agreement with the cut-off in high harmonic generation despite neglecting the core potential after tunneling.