Abstract Submitted
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Adiabatic Generation of Langmuir Trojan States in Helium Atom

MATT KALINSKI, Utah State University — We propose the generation of the recently discovered Langmuir Trojan states [1] in helium atom by the adiabatic sequence of electric, magnetic and electromagnetic fields turn-ons. First the Trojan wavepacket is generated from one electron originally in the circular state leaving the He^+ ion core by the adiabatic rapid passage during Zener tunneling. Next, the plane of its circular motion is adiabatically shifted by the static Stark field turn on parallel to the magnetic field and than the second Trojan wavepacket from Helium He^+ ion is generated but to much smaller off resonant orbit not much to influence the first one. Later the "two color" CP field is adiabatically adjusted by the frequency chirping to one frequency while turning off the symmetry breaking electric Stark field and turning on the magnetic field to stabilize the orbits at the same time. Numerical simulations using the time dependent Hartree method reducing the problem two Schrödinger equations in three dimensions solved with the Fast Fourier Transform split-operator method are also presented.

[1] Matt Kalinski, Loren Hansen, and David Farrelly,"Nondispersive Two-Electron Wave Packets in a Helium Atom," Phys. Rev. 95, 103001.

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