

Abstract Submitted
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Trojan Wave Packets in the Circularly Polarized and the Magnetic Fields on the Langmuir type (1) Helium trajectories extended for the $2N$ electron atoms MATT KALINSKI, Utah State University — We extend the concept of the Langmuir type (1) "Hoop Earrings" rotating Helium-like model trajectories [1] used in the early attempts to impose the Hydrogen Bohr atom quantization to more electron atoms to the $2N$ electrons. While the original Helium trajectories consist of two electron points moving in phase on the two parallel circles those correspond to two N electron configurations placed at the vertexes of angles of regular polygons also parallel in space, placed symmetrically on two parallel planes with respect the nucleus and also one being the perpendicular projection of the other. The addition of the Circularly Polarized electromagnetic field with the electric field rotating in planes of the field free electrons is causing the shape polarization distortion from regularity of the resulting polyhedron. The classical stabilization of the trajectories by the combination of fields further leads to the existence of non-dispersing localized wave packets moving around the trajectories. The time dependent Hartree simulations confirming existence of such Wave Packets in a selected cases as well as the simulations using our recently developed Time Dependent Quantum Diffusion Monte Carlo Method are conducted. [1] M. Kalinski, et al., Phys. Rev. Lett. bf 95, 103001, (2005).

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