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Trojan Wave Packets in Helium atom in configuration space - highly correlated laser-augmented two-electron motions of strongly driven Helium atom MATT KALINSKI, Utah State University — Some time ago [1] we have extended our theory of the Trojan Wave Packets to the two electron wave packets in Helium atom where the two Trojan Wave Packets on a parallel orbits are mutually stabilizing themselves in so-called Langmuir "hoop earrings" configurations. Unlike for the original Trojan Packets in the Hydrogen atom it requires to put the Helium atom in the magnetic field perpendicular to both orbits in addition to the Circularly Polarized (CP) field to stabilize the classical motion. Noticing that the 1-dimensional model of the Helium atom in the electric field of the linearly polarized electromagnetic wave is similar to the 2D model of the Hydrogen atom in such field and that the superposed hyper-dimensional 2D time dependent electric field has two counter-rotating CP field components we discover stable non-dispersing shape invariant Trojan Wave Packets in configuration space. They correspond to highly correlated electron motions in the physical space when one electron approaches the helium nucleus while the other escapes far. Within the full physical 6D Helium model they correspond to the low angular momentum highly correlated electron wave packet motions along the field polarization axes. [1] M. Kalinski, et al., Phys. Rev. Lett. **95**, 103001, (2005)

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