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Trojan wavepackets bound on Lagrange equllibrium points of two positive ions binary system in the strong magnetic field MATT KALINSKI, Utah State University — We once have shown that the combination of the Circularly Polarized Electromagnetic (CP) wave field and the central Coulomb proton field is capable to keep the hydrogen atom in the complex space-correlated coherent state of the electron in the rotating frame eliminating the principal time dependence [1]. This state corresponds to the stable and nondispersing electron wave packet moving around the circle in the laboratory frame. Here we show the existence of stable nondispersing single and two-electron wavepackets localized around Langrange equilibrium points of two positive ions in binary star configuration executing cyclotron motion around each other in strong eternal magnetic field. Unlike for the normal Trojan wavepackets they do not require external CP field to localize and correspond exactly to atom size scaled Trojan asteroids in the Sun-Jupiter system. The exact numerical simulations using Split Operator Fast Fourier Transform method are also provided for the single electron while the approximate time-dependent Hartree simulations for two electrons.

[1] I. Bialynicki-Birula, M. Kalinski, and J.H Eberly,"Lagrange Equilibrium Points in Celestial Mechanics and Nonspreading Wave Packets for Strongly Driven Rydberg Electrons," Phys. Rev. 73, 1777 (1994).

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