**Multi-Layer Polaronic Nondispersing Trojan-Like Wavepackets on Langmuir Type-(2) Click-Clack Balls Trajectories in Helium Atom and Quantum Dots**

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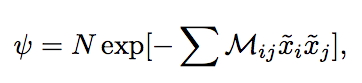
**Abstract**

Some time ago we have discovered that placing the Langmuir trajectories [1] of the type one i.e those in what we called the ”Hoop Earrings” configuration in a combination of the symmetry augmented Circularly Polarized (C.P.) electromagnetic field and the magnetic field perpendicular to the planes of the both electron parallel circular motions results in classical stabilization of the resulting Langmuir trajectories which therefore can support the stable non-dispersing quantum Trojan Wave Packets [2].

We have also recently shown that the Langmuir trajectories of the type two i.e. those corresponding to the popular toy, the Click-Clack Balls when two electrons are moving in one plane on the semi-circular trajectories with the opposite angular velocity, they bounce from each other, reverse the velocities and continue bouncing again and again also support such packets. To stabilize and confine the system further the perpendicular static magnetic field can be added in addition to the resonant L.P. field.

We have also found the nondispersing wavepackets in the joined combination of the external L.P. field and the parallel static magnetic for the several electrons which planes of the semi-circular bouncing motion are symmetrically oriented with respect to each other under the multiples of the integer fraction of the full 360 degrees angle.

We use the generalized Gaussian ansatz



for the packet wave function and solve the equations for the localization matrix M(t) together with the classical equations of the motion.

Here we find that such trajectories and the corresponding Wave Packets are also possible in the more complicated multi-layer polaronic configuration when not one but the several electrons each in a parallel layer are moving on each semi-circle and exchanging energy by the synchronized bouncing of each other in similarity to the one dimensional solid crystal propagating phonons which here are the polarons.

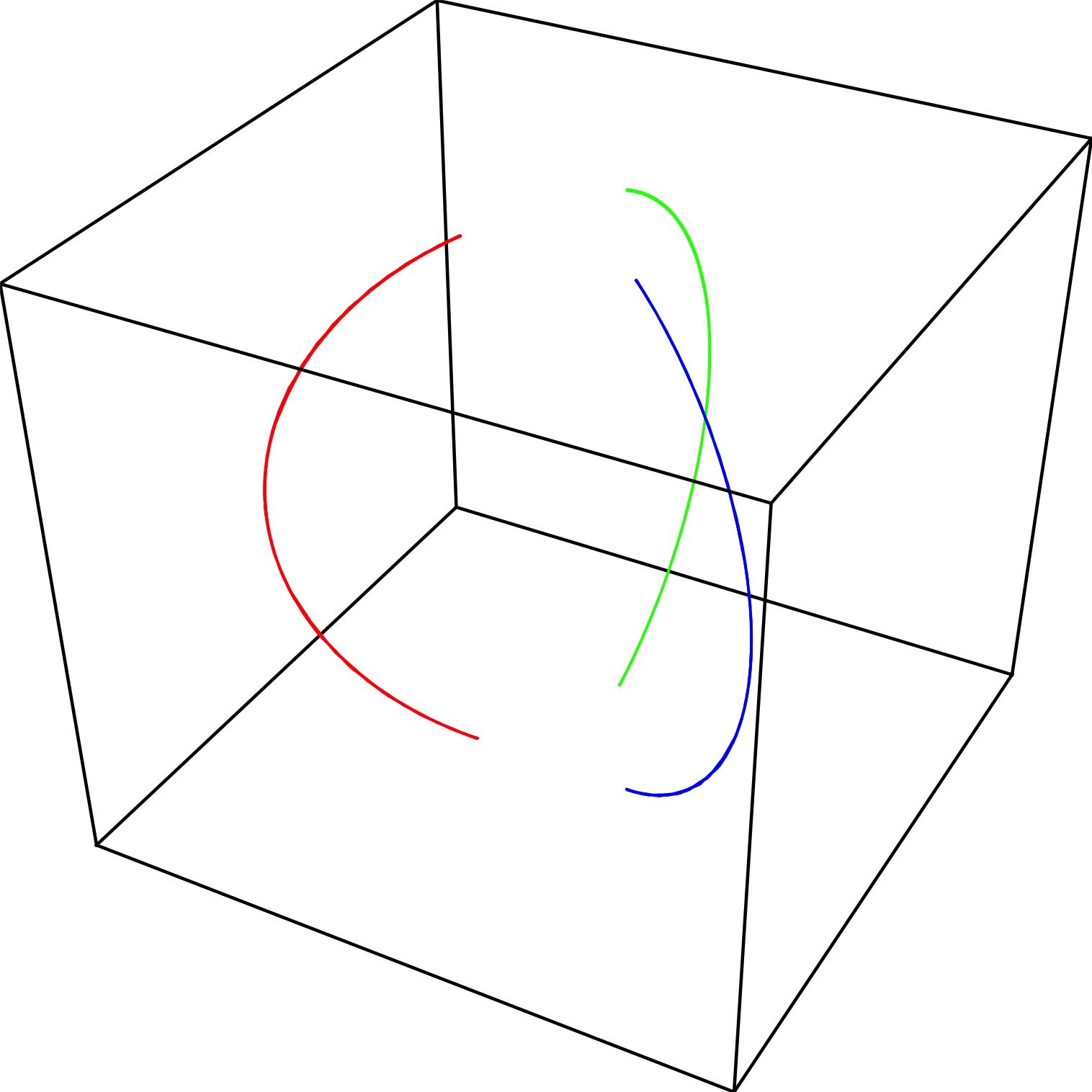
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Fig. 1. Langmuir three-electron (three-colors) trajectories executing the periodic motion of the multiple Click-Clack Balls.





Biography

Matt Kalinski (born 1968) is US theoretical physicist who discovered Trojan wave packets, sqeezed, coherent and intrinsically coordinate-entangled states of electrons in true atoms solving the long standing problem of interstellar rocket propulsion by extending the positron or positronium lifetime and control the arbitrary slowdown of the recombination process of antimatter in positronic rocket engine. Kalinski earned his PhD in Physics from the University of Rochester. The broad applications of his discovery of coherent non-dispersing electrons and electron pairs in atoms and polar molecules are important and not limited to photonic superconductivity, laser centrifugal isotope separation of Deuterium, theory of cold nuclear fusion in Palladium, detection of ultra-weak magnetic fields with Aharonov-Bohm effect, direct observation of Berry phase in single atoms, arbitrary quantum state preparation, observation of Unruh-Davies effect as well as for the detection of possible gravito-electromagnetic force and twisted corrections to Einstein equations and precise engineering of complex quantum dot systems.

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References:

[1] I. Langmuir, “The Structure of the Helium atoms”, Phys. Rev. 17, 339 (1921).

[2] M. Kalinski, L.Hansen, and D. Farrelly, “Nondispersive Two-Electron Wave Packets in a Helium Atom”, Phys. Rev. Lett. 95, 103001-103004 (2005).