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Slalom Channeling of Trojan Electrons in 1-Dimensional Ion Chains in Linearly Polarized Electromagnetic Field MATT KALINSKI, Utah State University — We have recently discovered that two positively charged ions placed in the linearly polarized (LP) field aligned with to the symmetry line joining the ion charges and with the frequency twice the closed motion can support stable nondispersing Trojan wavepackets moving on perfectly 8-shaped trajectories [1]. Here we show that halfs of such trajectories can be connected to spline into long range oscillatory motion in the linear chain of positively charged ions. This results in long distance slalom channeling of electron travelling in Trojan state for a distance of large multiple of the ionic lattice constant. To keep the wavepacket nondispersing the LP field polarization must be perpendicular to the electron motion and strictly adjusted to the the period when the packet is passing and avoiding the neighboring ions. The channeling event is extremely rare in the phase space and requires the precise choice of the wave packet momentum and the initial position at the beginning of the long range oscillatory motion. For the majority of wrong initial conditions the motion results in fast trajectory binding on one of the chain ions. Numerical simulations with the split operator method are also provided. [1] M. Kalinski, "Trojan-Like Wavepackets on 8-shaped orbits in Linearly Polarized Elctromagnetic Field in Hydrogen Ion Molecule," FiO 2009/LS XXV Annual Meeting, San Jose, California, October 2009.

Matt Kalinski
Utah State University

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