

Timberlake, Todd K., and Molly Nelson. "Quantum Signatures of Non-Newtonian Orbits in the Asymmetric Infinite Square Well." *Physical Review E* (2009) 79: 036213-1 – 036213-7. (DOI: 10.1103/PhysRevE.79.036213)

**Abstract.** An infinite square well with a rectangular step is one of the simplest systems to exhibit non-Newtonian ray-splitting periodic orbits in the classical limit. We examine eigenvalue spacings in the quantum version of this system. The sequence of spacings shows deviations from uniformity at energies just above the step height and distinct resonance features are visible at certain energies. Semiclassical analysis shows that these features are directly related to the presence of non-Newtonian orbits in the classical system. In addition, the resonance features are shown to produce revivals in suitably constructed wave packets peaked at the resonance energy.