

Abstract Submitted
for the APR18 Meeting of
The American Physical Society

Tracing Quantum Trajectories using the PIQTr Model¹ TORREY SAXTON, ZACHARY TEMPLE, ALLISON HARRIS, Illinois State Univ — The path integral technique is an alternative formulation of quantum mechanics that is based on a Lagrangian approach. In its exact form, it is completely equivalent to the Hamiltonian-based Schrödinger equation approach. We have used the path integral formalism to develop our Path Integral Quantum Trajectory (PIQTr) model for use in the study of charged particle dynamics. We will present results for several one-dimensional systems, and demonstrate the method's ability to analyze individual trajectories and their influence on the total probability amplitude. We will also show how the range of included trajectories can affect the time evolution of the wave function, resulting in interference fringes reminiscent of those observed with single slit Fresnel diffraction.

¹Work supported by NSF grant PHY-1505217.

Torrey Saxton
Illinois State Univ

Date submitted: 14 Dec 2017

Electronic form version 1.4