1031-65-132 **R. E. Wyatt*** (wyattre@mail.utexas.edu). *Quantum Dynamics with Trajectories: Bohmian, Post-Bohmian, Adaptive, and Un-Real Dynamics.*

The Schrodinger equation may be solved by propagating ensembles of quantum trajectories. The development of this approach will be reviewed, equations of motion for the quantum trajectories will be described, and alternative moving grids will be introduced. In addition to this ensemble approach, individual approximate quantum trajectories may be propagated using the derivative propagation method. In either approach, various 'moving frames' defined by the instantaneous trajectory locations may be defined. Bohmian motions define a Lagrangian grid, with grid point velocity the same as the local velocity of the probability fluid. However, it is advantageous to employ more general moving grids with 'post-Bohmian' trajectories moving at arbitrary velocities along constrained paths, which can enhance the trajectory stability. An alternative to 'real space' trajectory dynamics is based upon solving the complex-valued quantum Hamilton Jacobi equation on complex configuration space, yielding 'un-real' trajectories useful for describing barrier tunneling, including deep tunneling, and reactive scattering. Animations will be used to illustrate interesting dynamical features of the trajectory flows. (Received August 07, 2007)