Abstract Submitted
for the PSF09 Meeting of
The American Physical Society

Scattering With Euclidean Green's Functions PHILIP KOPP, WAYNE POLYZOU, University of Iowa — We show that it is possible to compute differential cross sections using matrix elements of polynomials in $e^{-\beta * H}$ in normalizable states. These matrix elements can be calculated by quadrature using reflection-positive Euclidean Green functions. The the proposed method is based on an explicit "time- dependent" computation of the Moeller wave operators using the Kato-Birman invariance principle to replace the Hamiltonian H by $e^{-\beta * H}$ in the expression for the wave operators. The compact spectrum of $e^{-\beta * H}$ allows uniform polynomial approximations of continuous functions of $e^{-\beta * H}$. We tested the method using a solvable model with the range and strength of a typical nucleon-nucleon interaction and found convergence to the transition matrix elements for energies up to 1.5 GeV(and possibly higher).

Philip Kopp
University of Iowa

Date submitted: 16 Oct 2009 Electronic form version 1.4