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A Time Dependent Approach for Computing N-N Phase Shifts and Cross Sections BRIAN DAVIS, DAVID WEEKS, Air Force Institute of Technology — Scattering matrix elements for n-n, n-p, and p-p collisions are computed using a new time dependent wave packet technique. Using this approach, reactant and product channel packets are prepared in the asymptotic limit on the N-N potential energy surfaces. For these calculations we are using the Argonne v18 potential package (1). The channel packets are propagated in time using the split operator method together with a unitary transformation that diagonalizes the tensor potential. Scattering matrix elements are computed from the Fourier transform of the correlation function between the evolving channel packets. Phase shifts and cross sections are computed from the scattering matrix elements . (1) R.B.Wiringa, V.G.J. Stoks, and R.Schiavilla, Phys Rev C **51** (1995) 38

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