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Analytical Expressions of Matrix Elements for Saxon-Woods Potential and Pad'{e} Approximations

Valentin Loan Remus NICULESCU
Institute of Atomic Physics, Institute of Physics
and Technology for Radiation Devices,
Electron Accelerators Laboratory,
Bucuresti-Magurele, P.O.Box MG-36, R-79600-ROMANIA
e-mail:NICVAL@roifa.ifa.ro
Dumitru CATANA
Institute of Atomic Physics, Institute of Physics
and Nuclear Engineering, Cyclotron Laboratory,
Bucuresti-Magurele, P.O.Box MG-6, R-79600-ROMANIA

Abstract: The paper presents the analytical matrix elements of the kinetic hamiltonian in the oscillator base. The Pad'{e} approximations for the potential part (Saxon - Woods and alike) was used. From residue calculus the potential matrix elements are analytical. Many parts of these expressions can be computed once for ever. In this way the evaluation time can be reduced and the relations obtained are well suited for parallel computation.

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