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High-performance analysis of the nucleus-nucleus elastic scattering data within the microscopic model of optical potential

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The MPI/C++ /Fortran package of computer codes has been developed for high-performance numerical analysis of experimental data on elastic nucleus-nucleus scattering within a microscopic model of optical potential. In the package, a modified DWUCK4 Fortran-code for calculating the physical characteristics of elastic scattering based on a numerical solution of the corresponding Schrödinger equation has been incorporated into the C++ framework, which is responsible for the input-output procedure and a comparison of numerical results with experimental data. MPI-based parallelism allows efficient calculations of the observables depending on a wide range of parameters of real and imaginary parts of the microscopic OP. The package has been used to analyze experimental data on differential cross sections of nucleus-nucleus elastic scattering.

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