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Total cross sections for nucleon elastic scattering from stable and unstable nuclei at energies between 10 MeV and 1 GeV H.F. ARELLANO, Physics Department - FCFM, University of Chile, H.V. VON GERAMB, University of Hamburg, M. GIROD, CEA/DIF/DPTA Service de Physique Nucléaire, Bruyères-le-Châtel, France — Parameter-free optical model potential results for total cross sections of nucleon elastic scattering are presented and discussed. The applications span over a wide energy range (10-1000 MeV) considering both stable and unstable nuclei. The study is based on *in-medium* g-matrix full-folding optical model approach with the appropriate relativistic kinematic corrections needed for the higher energy applications. The effective interactions are based on realistic NN bare potentials supplemented with a separable non-Hermitian term to allow optimum agreement with current *NN* phase-shift analyses, particularly to account for inelasticities above pion threshold[1)]. The ground-state radial densities of the targets are obtained from Hartree-Fock-Bogoliubov calculations based on the finite range, density dependent Gogny force. Total cross sections and reaction cross sections are evaluated for neutron and proton scattering from $^{12-26}$O, $^{34-64}$Ca, $^{50-86}$Ni, $^{96-136}$Sn and $^{176-224}$Pb. The results for the stable nuclei as function of the energy are in reasonable agreement with the data. The systematics of the calculated cross sections as function of the target neutron number is also discussed. Supported in part by FONDECYT grant 1040938.

1) H. F. Arellano and H. V. von Geramb, Phys. Rev C 66, 024602 (2002).

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