

THE NEW EXPERIMENTAL DATA ON THE ELASTIC SCATTERING OF PROTONS FROM ${}^6\text{Li}$, ${}^7\text{Li}$, ${}^{16}\text{O}$ AND ${}^{27}\text{Al}$ NUCLEI

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The differential elastic scattering cross sections for protons from ${}^6\text{Li}$, ${}^7\text{Li}$, ${}^{16}\text{O}$ and ${}^{27}\text{Al}$ nuclei have been measured for proton energies from 250 to 1300 keV, believed to be accurate to 10%, using a recently constructed precision scattering chamber. Excitation functions have been measured at the $\theta_{\text{lab.}} = 70^\circ$ and 170° with the step of 50 keV, and angular distributions from 10° to 170° have been measured at 250, 350, 450, 600, 800, and 1000 keV. The $1^+, 1$ and $1^+, 0$ states in ${}^8\text{Be}$ were observed at 386 and 901 keV correspondently. For ${}^6\text{Li}$, ${}^7\text{Li}$, ${}^{16}\text{O}$ and ${}^{27}\text{Al}$, these data have been parameterized in terms of nuclear scattering phase shifts and the phase shifts have been analyzed. A set of parameters has been derived for a global optical potential from elastic p - ${}^6\text{Li}$, p - ${}^7\text{Li}$, p - ${}^{16}\text{O}$ and p - ${}^{27}\text{Al}$ scattering with present range of energy. The optical model predictions were tested

with data from elastic scattering. Wherever possible, detailed comparisons are given to previously reported results.