understood, as is reflected in the much inferior fits to the analyzing-power data.

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3) H.V. Geramb, F.A. Brieva, and J.R. Rook, Proceed. Conf. on Microscopic Opt. Potent., Hamburg 1978, p. 104.

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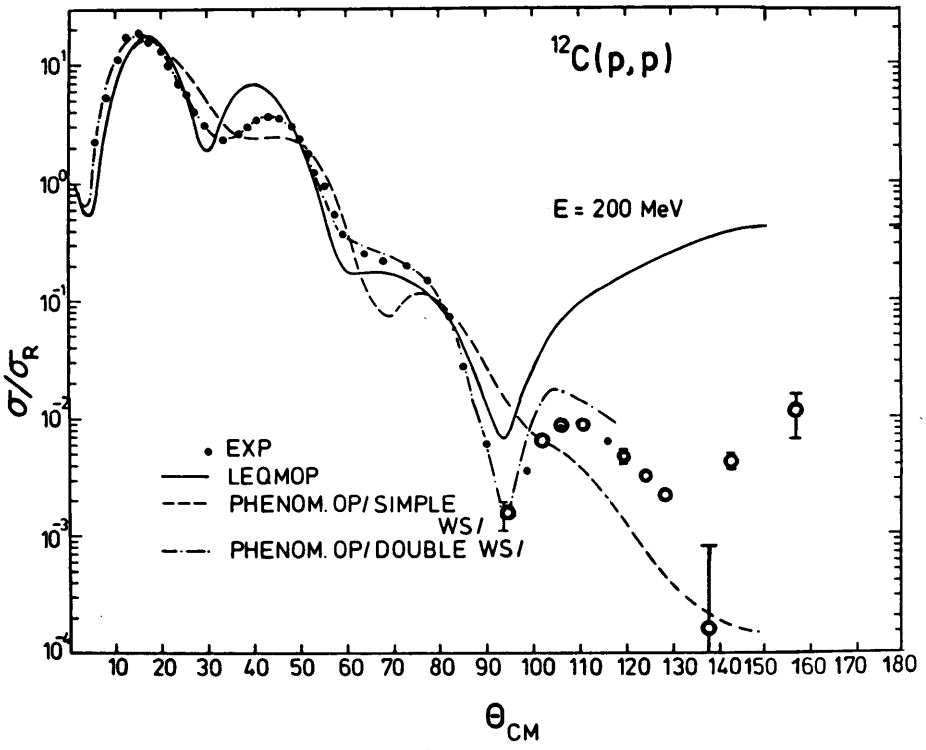

Figure 1. Comparison of the prediction of a microscopically-derived local equivalent optical potential (solid curve) with the measured differential cross sections for 200 MeV p + ^{12}C scattering to high momentum transfer ($\lesssim$ 6 fm^{-1}).

ELASTIC SCATTERING OF 200 MeV POLARIZED PROTONS FROM ^{9}Be and ^{16}O

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As part of the program to measure proton elastic scattering from light nuclei (^{9}Be, $^{12,13}C$, ^{16}O) at 200 MeV over a wide range of momentum transfer ($q > 5$ fm^{-1}) as input into a systematic study of the real central potential shape in the proton optical model,[1] we have made preliminary measurements of the differential cross section, $\sigma(\theta)$, and analyzing power, $A_y(\theta)$, for $\vec{p}$ + ^{9}Be and $\vec{p}$ + ^{16}O elastic scattering at forward angles, $6° \lesssim \theta_{lab} \lesssim 52°$, using the QDDM magnetic spectrograph. To obtain the small angle ^{16}O data, a combination of Be and BeO targets was used.

The data obtained so far for $\sigma_{lab}(\theta)$ and $A_y(\theta)$ are presented in Figures 1 and 2, respectively. While the differential cross sections for ^{9}Be and ^{16}O are very similar in structure, major differences in the angular dependence of the measured analyzing powers are

observed for $\theta_{lab} > 30°$. The ^{16}O analyzing power is very similar to that measured for ^{12}C at this energy,[1] while the ^{9}Be analyzing power resembles the polarization measured in 180 MeV p + Li scattering.[2]

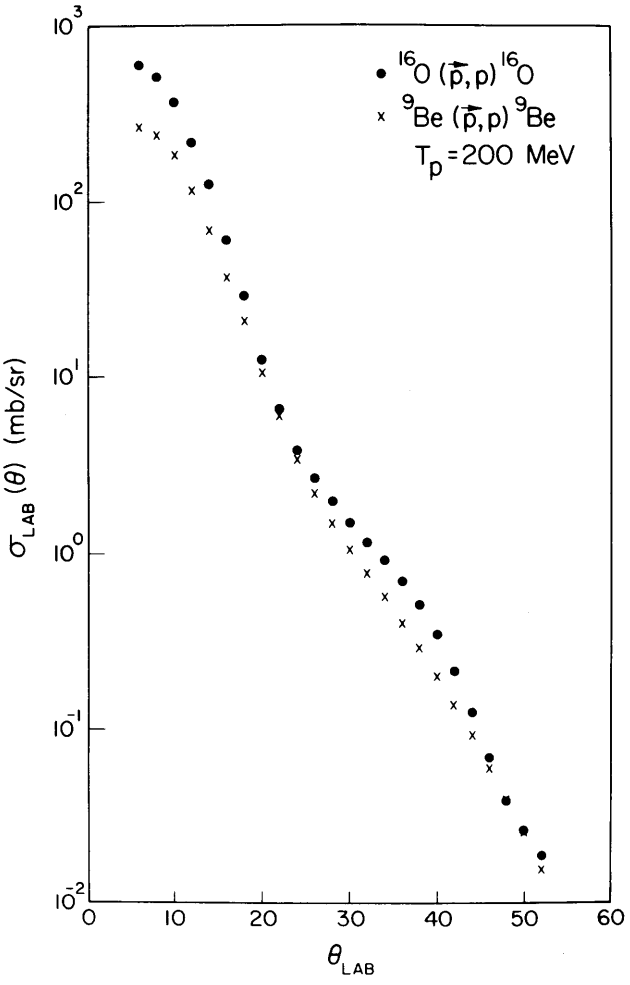

Figure 1. Laboratory differential cross sections for 200 MeV proton elastic scattering from ^{9}Be and ^{16}O.

The continuation of these measurements to larger angles is expected to be scheduled in early 1981. Optical-model analyses of the full angular distributions will be undertaken following acquisition of the of the large-angle data.

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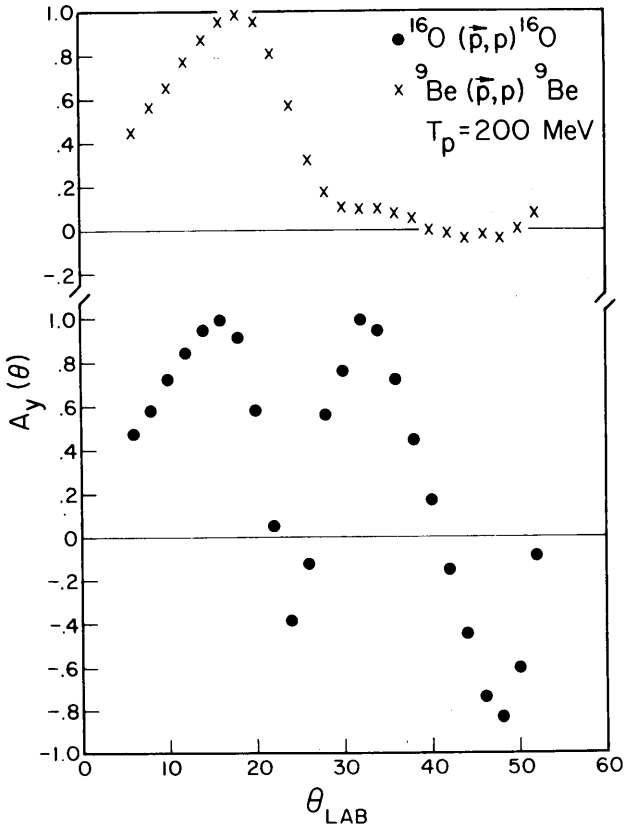

Figure 2. Analyzing powers for elastic scattering of 200 MeV polarized protons from ^{9}Be and ^{16}O.

STUDY OF RELATIVISTIC EFFECTS IN OPTICAL MODEL CALCULATIONS

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Recently, unconventional (non-Woods-Saxon) shapes have been encountered in the analysis[1] of 200 MeV proton scattering from ^{12}C. One of the open questions has been whether relativistic effects in a conventional phenomenological optical-model analysis can be responsible for part of this phenomenon. This is investigated for a model case, representative of proton scattering from ^{12}C. The model case was defined by the choice of a standard potential $\{P_o\}$ consisting of a complex central part (simple WS form) and a real spin-