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ELASTIC AND INELASTIC SCATTERING OF POLARIZED PROTONS  
BY  $^{48}\text{Ca}$  AT HIGH MOMENTUM TRANSFER

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Elastic and inelastic scattering of polarized protons on  $^{48}\text{Ca}$  were studied at an incident energy of 160 MeV using the QDDM magnetic spectrograph. Data were taken in the fast spin-flip mode, with typical spin up and down polarizations of about 68 percent. About 35 peaks, representing excitations up to  $\approx 10$  MeV, have been analyzed. Portions of spectra obtained for a

forward angle and a backward angle are shown in Figs. 1 and 2. Cross section and analyzing power angular distributions are shown in Fig. 3. Of special interest is the  $1^+$  state at 10.2 MeV excitation which might be expected to show evidence of precritical phenomena. Data for this state are shown in Fig. 4.

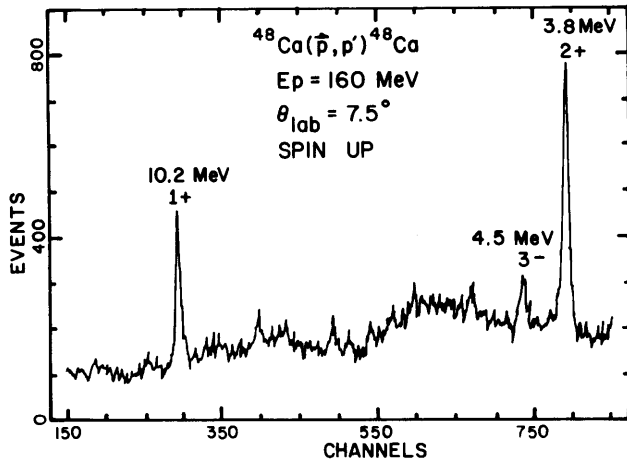


Figure 1. Spectrum of inelastic protons taken at  $\theta_{\text{lab}} = 7.5^\circ$  for one orientation of beam spin.

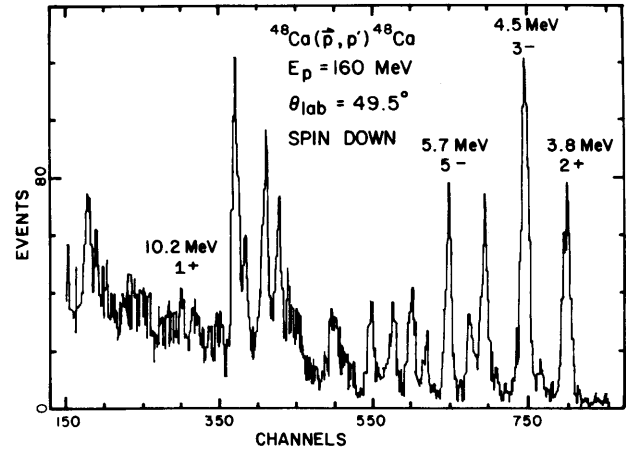


Figure 2. Spectrum observed  $\theta_{\text{lab}} = 49.5^\circ$  for one beam spin orientation.

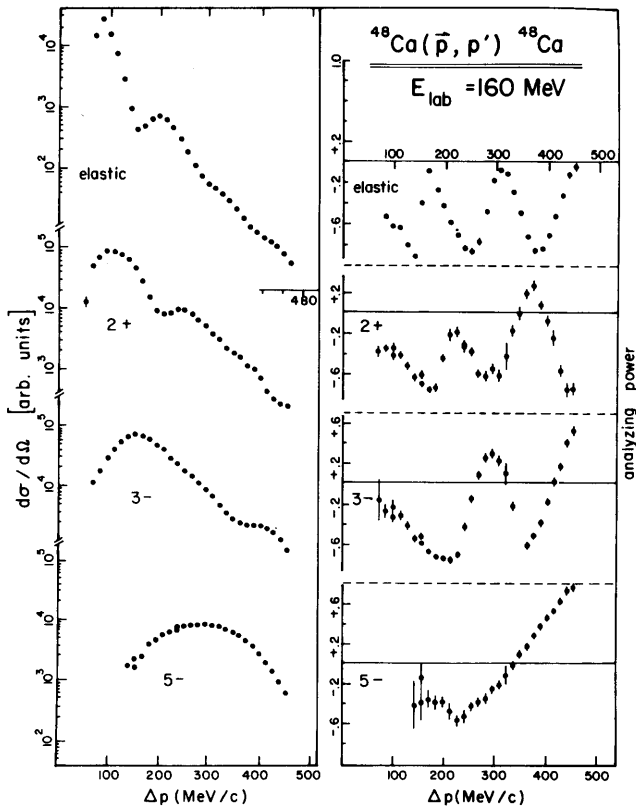


Figure 3. Differential cross-section and analyzing-power angular distributions for selected states indicated in the spectra of Figs. 1 and 2. Note that in this figure the analyzing powers are plotted with the wrong sign.

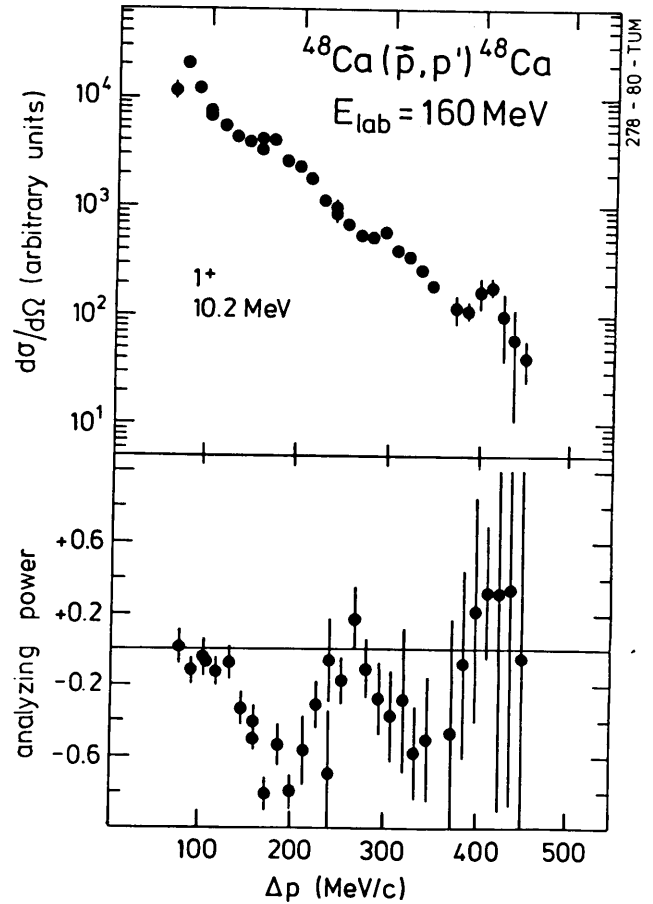


Figure 4. Differential cross-section and analyzing-power results for the  $1^+$  10.2-MeV excitation in  $^{48}\text{Ca}$ . The analyzing power is plotted with the wrong sign.