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In the ongoing program of measurement of giant resonance (GR) excitation through hadron inelastic scattering, the giant resonances excited in  $^{28}\text{Si}$  and  $^{92}\text{Zr}$  have been studied by means of inelastic scattering of 115 MeV protons. The measurement was carried out using two 1.5 cms thick intrinsic Ge detectors in a  $\Delta E$ -E telescope. The overall resolution achieved in these measurements was about 200 keV. The present data covers the angular range of  $10^\circ$  to  $34^\circ$ ; measurements forward of  $10^\circ$  are in progress. The  $^{28}\text{Si}$  excitation spectrum in the GR region (15-23 MeV) exhibits considerable structure, of 200 to 500 keV in width (see Figure 1), comparable to that observed in 120 MeV ( $\alpha, \alpha'$ ) and 61 MeV ( $p, p'$ ) data.<sup>1)</sup> Over the angular range measured so far, these structures exhibit a common angular dependence suggestive of L=1 and L=2 admixtures (Figure 1).

For  $^{92}\text{Zr}$ , we observe a pronounced enhancement in the GR region composed of three broad peaks of roughly 3-4 MeV width located around 13, 15 and 17 MeV (Figure 2). The relative intensities of these three peaks change noticeably with angle. In the top half of Figure 2 we plot the angular distribution for the octupole resonance (L=3) excited around an excitation energy of 8 MeV and that of two MeV wide bins centered around 13, 15 and 17 MeV. Plans are under way to extend this type of measurement with targets covering a wide mass range to study the systematics with which giant resonances of various multipolarity are excited with medium energy protons.

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1) K. Van der Borg *et al.*, Phys. Lett. **67B**, 405 (1977).

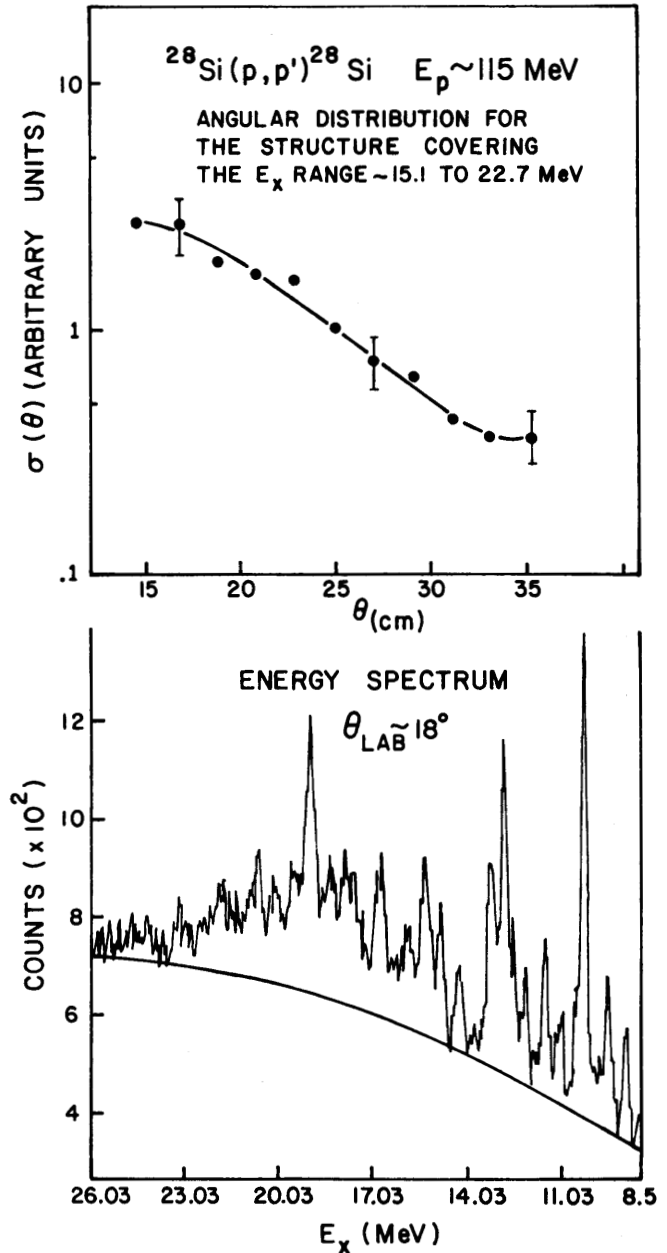


Figure 1. Spectrum from the ( $p, p'$ ) reaction at 115 MeV for  $^{28}\text{Si}$  and angular distribution for the giant resonance structure.

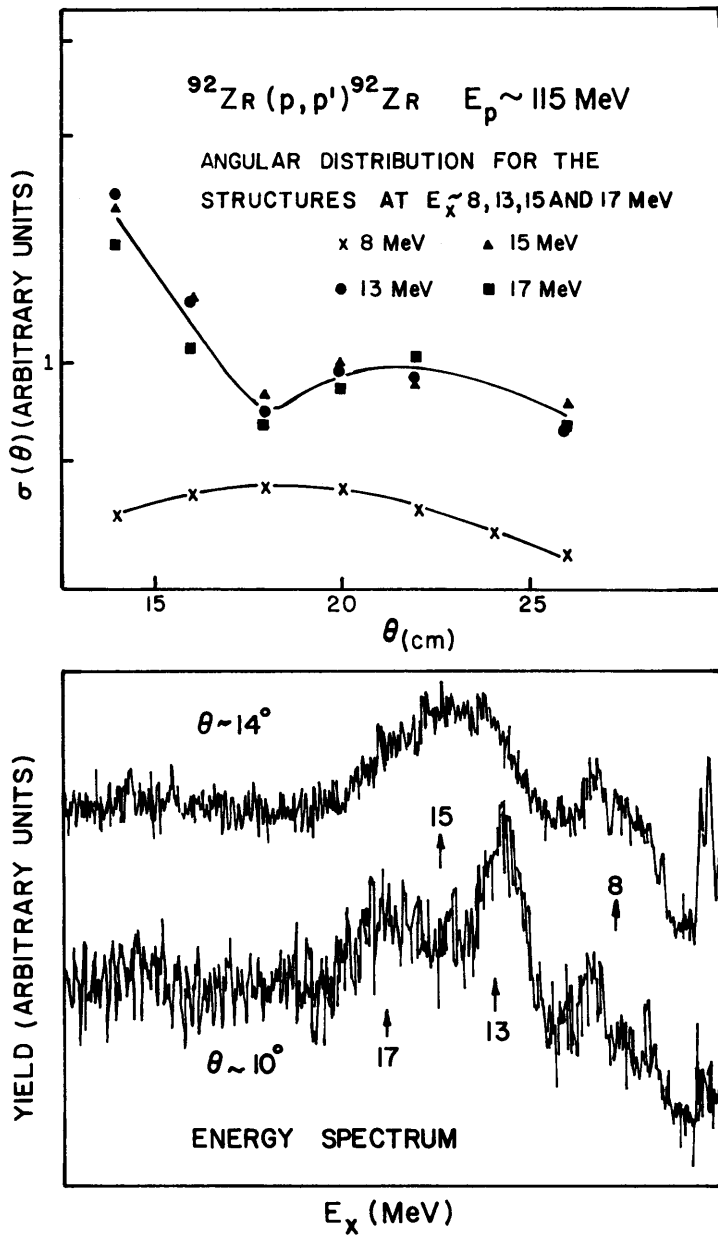


Figure 2. Spectra from the  $(p, p')$  reaction at 115 MeV for  $^{92}\text{Zr}$  and angular distribution for the structures at  $E_x \sim 8, 13, 15$  and  $17 \text{ MeV}$ .