PHOTOPROTONS FROM ^{90}Zr AND THE ISOSPIN SPLITTING OF THE GIANT DIPOLE RESONANCE

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Photoproton spectra have been measured by irradiating a ^{90}Zr target with bremsstrahlung gamma-rays of seven different end-point energies in the range from 14.7 to 23.8 MeV. By the least squares method cross sections for reactions, leaving ^{89}Y in the ground and different excited states have been calculated.

Photoprotons emerging from a 8.05 mg/cm^2 target, enriched to 97.5% of ^{90}Zr were detected with Si (Li) detectors at three angles (30^o, 90^o and 150^o). Because of the large background at low energies only protons, with energy greater than 4 MeV were counted. Here, the 90^o data are presented. Proton energy resolution was defined practically only by the target thickness and ranged from 230 keV at 8 MeV to 180 keV at 12 MeV.

Since the average spacing of the energy levels in ^{89}Y is narrower than the used steps of the bremsstrahlung end-point energies (1.5 MeV) it was possible to obtain cross sections for transitions to g.s. and only a few groups of excited states. The later were identified by their mean energies. As there was no information about the population strength of residual states, the number of groups as well as their mean energies were varied until the separation of the cross section for transitions to groups of excited states is actually conditioned by the spacing between them. As the result of the final fit the ground state and three groups of the excited states were separated (mean energies of 1.8, 4.0 and 6.0 MeV).