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LETTER TO THE EDITOR

THE MEASUREMENT OF ^{90}Zr (γ, 2n) ^{88}Zr AND ^{90}Zr (γ, np) ^{88}Y CROSS SECTIONS

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The Zr target was irradiated with betatron bremsstrahlung of different end-point energies. A 27 cm^3 Ge (Li) detector was used to measure the activity of the 0.394 MeV ^{88}Y* state (83^d) and the activity of the 1.836 MeV ^{88}Sr state (107^d). The cross sections for the reactions (γ, 2n) and (γ, np) were determined by the method of Penfold and Leiss. The results are presented in Fig. 1.

As seen from the decay scheme of the giant resonance (upper part of Fig. 1) the decay of the $T >$ part of the giant resonance through the (γ, 2n) channel is isospin forbidden.

The statistical calculation assuming (γ, 2n) and (γ, np) as two-step processes yields a ratio of (γ, np) to (γ, 2n) cross sections too small compared to the measured values. The difference coulld be explained with a dominant $T >$ isobaric spin of the ^{90}Zr giant resonance in the region above 22 MeV. In this case the residual ^{89}Zr states have $T = 11/2$ for which the neutron decay is isospin forbidden and the decay through proton channels is enhanced.

Some other evidences for the isospin splitting of the giant resonance also support this conclusion[1].

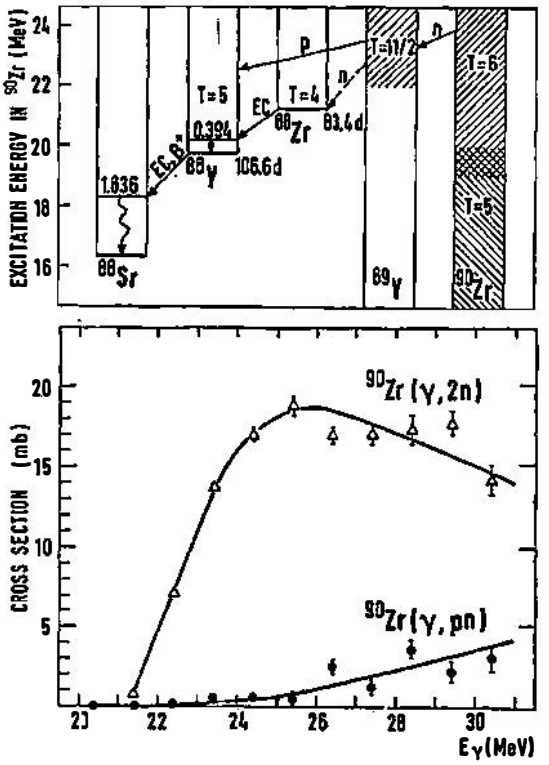

Fig. 1. Cross sections for the reactions ^{90}r $(\gamma, 2n)$ ^{88}Zr and ^{90}Zr (γ, np) ^{88}Y. The curves have been drawn arbitrarily through measured points.
The decay of the giant resonance through $(\gamma, 2n)$ and (γ, np) channels is schematically shown in the upper diagram.

References

1) G. Kernel, Fizika 4 (1972) 97.

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