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Title: PHOTOPROTON DECAY OF THE P-31 GIANT-RESONANCE

Author(s): KERKHOVE, E; FERDINANDE, H; VANOTTEN, P; RYCKBOSCH, D; VANDEVYVER, R; BERKVEN, P; VANCAMP, E; AKSOY, A

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Abstract: The $^{31}(\gamma,p)^{30}\text{Si}$ reaction was studied at seven angles for nine bremsstrahlung end point energies varying from 17 to 25 MeV in 1 MeV steps. Absolute (γ,p_0) and (γ,p_1) angular cross sections for ^{31}P in the excitation energy interval between 14.6 and 25 MeV were extracted and angular distribution factors were deduced by fitting a sum of Legendre polynomials to the data. Absolute cross sections for various other photoproton reaction channels were determined using an artificially constructed pseudo-monoenergetic photon spectrum. The total (γ,p) cross section was evaluated up to 24 MeV excitation energy. About 53% of this cross section is due to a direct-semidirect reaction mechanism. The angular distribution factors in the (γ,p_0) channel were used to estimate the contribution of $E2$ photon absorption in this channel. It was found that between 48% and 63% of the isoscalar $E2$ energy-weighted sum rule is exhausted by this (γ,p_0) channel.