

Investigation of dipole strength in gaseous targets at the ELBE accelerator

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For the first time a high-pressure gas target has been investigated at the bremsstrahlung facility at the ELBE accelerator of the Helmholtz-Zentrum Dresden-Rossendorf. The experiment was carried out at electron beam energies of 7 and 12 MeV in order to study dipole excitations up to an energy region up to the neutron separation. The talk will present data analysis and simulations methods of the experiments in Rossendorf.

GEANT4 simulations were performed to subtract the atomic background from the measured spectrum and deduce the intensity of the resonantly scattered γ -rays. Also the response functions for the high-purity germanium detectors were simulated by GEANT4, which allows us to deduce the intensity of unresolvable peaks due to decreasing level-spacing. Considering also the transitions from states in the quasicontinuum, simulations of γ -ray cascades were carried out with a new code to estimate branching ratios. As a result the photoabsorption cross section obtained from transitions to the ground state is calculated. The data will be presented in the context of further photon-scattering experiments performed in Rossendorf on the stable isotopes at the closed neutron shell $N = 50$.