DIPOLE RESONANCE SPLITTING AND SHELL STRUCTURE PECULIARITIES OF ⁵²Cr NUCLEUS

Goncharova N.G., Dolgodvorov A.P.

Lomonosov Moscow State University Skobeltsyn Institute of Nuclear Physics, Russia E-mail: n.g.goncharova@gmail.com

Microscopic description of giant resonances and resonance of higher multipolaties (MGR) in ⁵²Cr and ⁵⁴Fe nuclei was performed in the multiparticle shell model (MSM). The resonances in nuclear excitations cross sections according to MSM are results of doorway-states' collectivisation. This approach was quite successful in interpretations of the main peaks locations on the energy axis for magic nuclei but not for the even-even non-magic ones. Some advance in the interpretation of MGR fragmentation could be attained in the Particle-Core Coupling Version of MSM (PCC SM). PCC SM takes into account the spreading of hole configurations among the states (A-1) daughter nuclei [1]. A full set of basic configurations generating E1 resonances could be obtained from the hole state distribution's analysis revealed in pick-up reaction spectroscopy. This method allows to get a realistic description of E1 resonance in ⁵⁴Fe nucleus [2]. The ⁵⁴Fe nucleus has two additional protons in comparison with ⁵²Cr in unfilled $1f_{7/2}$ subshell. The spectroscopic factors' distributions in both nuclei show considerable fragmentation of $1f_{7/2}$ subshell as well as deeper subshells. The energy splitting of subshells revealed in the pick-up reaction spectroscopy of ⁵²Cr together with isospin splitting are the main sources of strengths of E1resonance fragmentation. The results of PCC SM calculations based on spectroscopy [3] and the comparison with experiment [4] are shown in the Fig.1.



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