

ON DAMPING OF THE GAMOW-TELLER RESONANCE IN ^{118}Sb

Igashov S. Yu.¹, Urin M.H.²

¹*All-Russia Research Institute of Automatics, Moscow, Russia;*

²*National Research Nuclear University "MEPhI", Moscow, Russia*

E-mail: urin@theor.mephi.ru

The unique experiment on observation of the Gamow-Teller resonance (GTR) with the resonance $^{117}\text{Sn}(p, n_{\text{tot}})$ - reaction [1] and intention to repeat this experiment soon [2] stimulate us to extend the previous study of this GTR [3]. The new point consist in estimation of the "elastic" partial proton width for each GTR component observed in Ref. [1]. To formulate the appropriate method, we first simplify the standard version of the "charge-exchange" continuum-quasiparticle-random-phase approximation (pn-cQRPA) of Ref. [4] considering only high-enough excitation energies. Keeping in this case only the particle-hole component of the free two-quasiparticle propagator taken in a simplified form, we satisfactorily reproduce in calculations of the GTR strength functions for the $^{116}, ^{118}, ^{120}\text{Sn}$ parent nuclei the results obtained in Ref. [3] within the "exact" version of the pn-cQRPA. Within this approach we further formulate the non-standard version of the simplified pn-cQRPA and take phenomenologically into account the spreading effect in the "pole" approximation. In applying to the GTR in doubly-closed-shell parent nuclei (i.e. in the absence of nucleon pairing) such a method is described in Ref. [5]. As a result, we estimate the "elastic" proton widths of the two-bump GTR in the ^{118}Sb compound nucleus and compare these quantities with the corresponding data of Ref. [1].

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1. B.Ya.Guzhovski, B.M.Dzyuba, V.N.Protopopov // JETP Letters. 1984. V.40. P.487.
2. S.N.Abramovich, A.G.Zvenigorodsky // Book of Abstr., LXIII Int. Conf. "Nucleus 2013". P.232.
3. S.Yu.Igashov, V.A.Rodin, M.G.Urin // Phys. At. Nucl. 2013. V.78. P.429.
4. S.Yu.Igashov, V.A.Rodin, A.Faessler, M.H.Urin // Phys. Rev. C. 2011. V.83. 044301.
5. I.V.Safonov, M.G.Urin // Phys. At. Nucl. 2012. V.75. P.1481.