# ON NATURE OF 721.6 eV RESONANCE IN $^{238}U$

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The results of recent capture $\gamma$-ray spectra measurements for resonances of $^{238}U$ are presented. The most interesting are those at 721.6 *eV* and 1211.4 *eV*. It was concluded from the analysis of fission and capture cross section measurements that these resonances are predominantly class-II levels by nature. Since the secondary well in $^{239}U$ is ~2 *MeV* shallower than the primary well, the $\gamma$-ray spectrum for resonances of this type must be much softer than that of the ordinary class-I resonances. To date, the experimental situation is contradictory: Browne [1] observed a much softer $\gamma$-ray spectrum for 721.6 *eV* resonance, whereas Weigmann et al. [2] observed no difference.

Our experiment was performed after the manner of Weigmann utilizing the TOF-facility GNEIS. It was found that the ratio of resonance area for upper $\gamma$-ray bias B2 and lower bias B1 has different dependence on

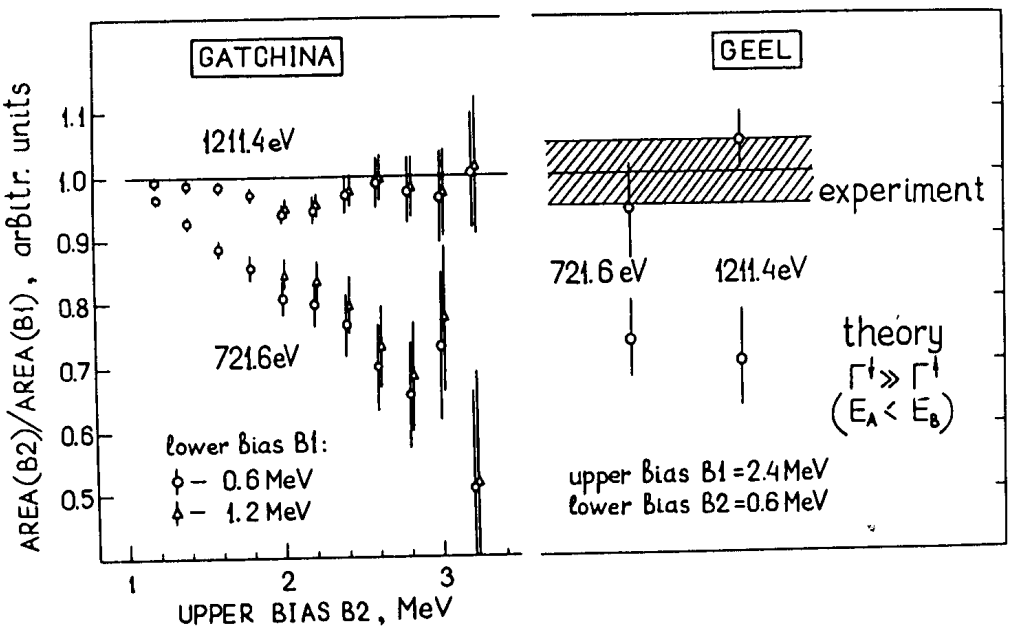


Fig. Results of capture $\gamma$-ray measurements for the 721.6 *eV* and 1211.4 *eV* resonances of $^{238}U$

the value of B2 for resonances in question. The experimental ratios for 721.6 *eV* are in agreement with assumption that this resonance is essentially class-II state, whereas for 1211.4 *eV* resonance the major component of the class-II state is still undetected. The figure shows our results and those of Weigmann et al. (Geel).

**References**


*1. Browne J.C. // Proc.Int.Conf. on the Interaction of Neutrons with Nuclei: Lowell, Mass., July 6-9, 1976 / Univ. of Lowell. V.11. P.1402.*

*2. Weigmann H. et al. //Proc. 2-nd Int.Symp. on Neutron Capture Gamma-Ray Spectroscopy and Related Topics: Petten, 1974 / Reactor Centrum Nederland, Petten, 1975. P.673.*