INVESTIGATION OF ^{166}Er IN (n, $n'\gamma$) REACTION

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The results of measurements of γ-spectra, γ-quantum angular distributions with respect to the neutron beam axis and linear polarizations of γ-transitions following ^{166}Er(n, n' γ) reaction are presented. Experiments were performed by using fast neutron beam facilities on the IR-8 reactor installed at the NRC "Kurchatov Institute". A lot of earlier unknown γ-transitions belonging to ^{166}Er were found and for more 50 γ-transitions the multipole mixig ratios were determined. The level and γ-transition scheme of this nucleus was constructed. Using the obtained experimental data and features of (n, n' γ) reaction all levels with angular momentum J = 0÷4 up to 1.9 MeV excitation energy was established and the problems with $K^{\pi} = 0^{+}_{2}$ and $K^{\pi} = 2^{+}_{2}$ rotational bands (the lack of $J^{\pi}K = 2^{+}0_{2}$, $4^{+}0_{2}$ and $3^{+}2_{2}$ band levels at expected energies) [1] were confirmed.

The levels for the $K^{\pi} = 1^{+}_{1}$ rotational band ($2^{+}1_{1}$, $3^{+}1_{1}$ and $4^{+}1_{1}$ levels) were ascertained. It is necessary since one from reasons of the observed peculiarities connects with Coriolis interaction of the levels with $K^{\pi} = 0^{+}_{2}$, 2^{+}_{2} and 1^{+}_{1} (the level energies of these ground bands: 1713.41 keV, 1703.10 keV and 1812.76 keV).

1. E.P.Grigoriev // Yad. Fiz. 1994. V.57. P.590.