

Evidence for the Scissors Mode in ^{160}Tb from the Two-Step Gamma Cascade Measurement*

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Spectra of two-step γ cascades (TSCs) following the neutron capture in ^{159}Tb were measured by sum-coincidence technique with a two-HPGe-detector facility installed at a pure sub-thermal neutron beam of the 15 MW light-water research reactor at Řež.

In order to obtain information about the quantities governing the γ decay of ^{160}Tb levels – the photon strength functions (PSFs) and the level density (LD) – experimental TSC spectra were compared with the output of simulations of the γ -cascade decay based on the validity of the extreme statistical model. These simulations were performed with the aid of the DICEBOX algorithm [2] assuming various combinations of the LD and PSFs.

The results obtained lead to an inescapable conclusion that the scissors mode plays a marked role in the cascade γ decay of the product nucleus ^{160}Tb . This finding represents the first evidence for the existence of this mode in an odd-odd deformed nucleus.

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[1] J. Honzátko *et al.*, *Nucl. Instr. Meth.* **A376** (1996) 434

[2] F. Bečvář, *Nucl. Instr. Meth.* **A417**, (1998) 434