

NEW RESULTS OF BAND STRUCTURE OF SUPERDEFORMED NUCLEI

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Recent results on high-spin states in superdeformed Gadolinium isotopes $A = 147 - 149$ will be presented. Several new discoveries related to the superdeformed structures in these nuclei make now a comparison theory-experiment much more direct and the experimental message more constraining for the microscopic calculations. This concerns in particular the back-bending effect observed at very high rotational frequency, the superdeformed band degeneracies which confirm the very particular role of the proton $[301] 1/2$ and the neutron $[411] 1/2$ orbitals, the characteristic staggering with the spin-step equal to 4, discovered in a few bands in this mass region and a few other effects.

These discoveries, among many others, were possible, thanks to the new developments in detection techniques, by the construction of the gamma multidetector array of new generation EUROGAM phase 2. This France-UK instrument is presently located at the electrostatic accelerator VIVITRON which became recently operational at CRN Strasbourg. Other multidetectors, for charge particle and neutron detection, have also been developed in correlation with VIVITRON construction. The performances of those devices will be briefly presented and the first results of the experiments will be reported. The use of ancillary detectors with the photon multidetector EUROGAM array will also be emphasized.