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Complementary study of double-octupole states in ^{150}Sm

We present preliminary results from a recent investigation performed at ILL to study the presence of the negative-parity components in the structure of positive-parity states in atomic nuclei. In order to identify the candidates for such states one has to investigate the excited states in medium mass nuclei around $N=88$ using various probes. The first experiment was performed in Munich and was a two-neutron transfer reaction in order to find the correct energy of various levels and their total angular momentum. The second investigation was a beta-decay study to populate the low-spin states in ^{150}Sm and to determine their gamma decay pattern. Therefore, the experiment performed at ILL using the $^{149}\text{Sm}(n,\gamma)$ reaction was concentrated on determining the decay pattern of the medium-spin levels and therefore, completes a series of experimental investigations on ^{150}Sm . Gamma rays were detected using the FIPPS array composed of 16 clover detectors, eight of them being supplied by IFIN-HH. The reaction has populated a large number of states up to about 8 MeV with spin numbers typically around $J=4$. Key information will be extracted from the decay of these states and their angular correlation measurements.

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