

Nuclear Structure at extreme conditions through γ spectroscopy measurements

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Nuclear structure properties at extreme conditions of temperature, angular momentum and proton/neutron number have been studied through the measurements of the γ -decay of the excited nucleus. Relevant progress has been obtained investigating the collective response of the nuclear system, both in terms of vibration and rotation. In particular, the temperature degree of freedom allows one to study the order-to-chaos transition and the persistence of collectivity in deformed systems, the angular momentum focuses on shapes changes and pairing correlations, while moving away from the stability line makes it possible to investigate isospin effects, which are interesting also for astrophysical aspects like the nucleosynthesis of different elements. These points will be discussed in connection with present experiments on nuclei with different masses, deformations and selected configurations. In addition, future developments with both stable and radioactive beams will be presented.