

## **Structure of exotic nuclear states revealed through nuclear moment measurements**

Dimiter Balabanski

INRNE, Bulgarian Academy of Sciences, 1784 Sofia, Bulgaria

**Abstract:** An important aspect to understand collective excitations in atomic nuclei is through measurements of their magnetic dipole and electric quadrupole moments. While nuclear magnetic moments are sensitive to the orbits occupied by the valence particles, the electric quadrupole moments prove the deformation and the collective behavior of nuclei at both low and high excitation energy. Both, the nuclear gyromagnetic factor and the electric quadrupole moment can be compared to theory and thus play important role to establish changes in nuclear shell structure far away from stability. Recent results from experiments aiming at measurements of electromagnetic moments of exotic nuclei and of exotic nuclear states will be reported. The following experiments will be discussed:

- First results from the g-RISING campaign at GSI, where secondary beams produced in fragmentation at relativistic energies were utilized for measurements of gyromagnetic ratios of isomeric states. The experimental technique will be discussed and the results about the  $19/2^+$  isomer in  $^{127}\text{Sn}$  and the  $10^+$  isomer in  $^{128}\text{Sn}$  will be presented.
- Electromagnetic moments of isomeric states, which were measured at GANIL, will be presented, and the experimental technique will be discussed. Recent measurements around  $^{68}\text{Ni}$  will be discussed.
- First results from experiments to measure nuclear electromagnetic moments in transfer reactions will be presented and the perspectives to utilize this technique with post-accelerated ISOL beams in inverse kinematics will be discussed.