# SAGE SPECTROMETER
# STATUS AND FIRST RESULTS

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In-beam γ-ray and electron spectrometers have long been used as tools to probe the structure of atomic nuclei. However, if used separately they can provide only partial information of the nuclear de-excitation processes and consequently of nuclear structure. This becomes increasingly problematic in heavy nuclei, especially at low transition energies and high multipolarities, where internal conversion competes strongly with γ-ray emission. The simultaneous measurement of γ–rays and conversion electrons can provide crucial information on nuclear configurations via g-factor measurements, which can be determined through branching ratios involving a transition favoured in γ-rays (E2) and one favoured in conversion electrons (M1).

The SAGE spectrometer [1, 2] allows efficient cross-coincidence measurements between γ-rays and conversion electrons by combining the JUROGAM II germanium detector array with a highly segmented silicon detector and a solenoid electron transfer system. It employs digital front-end electronics and is coupled with the RITU gas-filled recoil separator and the GREAT focal-plane spectrometer for Recoil-Decay Tagging studies.

SAGE has been employed so far in the study of transfermium nuclei ($^{251}$Md, $^{253}$No and $^{255}$Lr) and the investigation of shape coexistence in the light lead region (in mercury, lead and radon nuclei) and also in samarium (the first coulomb excitation experiment with SAGE).

In this presentation the concept and principles of a γ-e$^-$ spectrometer will be introduced and an overview of preliminary results from the first experimental campaign will be presented.

## References

[1] P. Papadakis et al., AIP Conf. Proc., 1090 (2009) 14
[2] J. Sorri et al., Phys. Scr. **85** (2012) 055201