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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 SAGE spectrometer [1] 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 is primarily employed in the study of superheavy nuclei in the quest of finding the "Island of Stability" and the next closed spherical shells. Experiments studying shape coexistence in the light lead region have also been performed.

The SAGE spectrometer has been successfully commissioned in the University of Jyväskylä in 2010. The setup will be described and results from the first in-beam measurements showing the performance of the spectrometer will be presented.

1. P. Papadakis et al., AIP Conf. Proc., 1090(2009) 14

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