

Combined electron and gamma spectroscopy of heavy nuclei

The SAGE spectrometer^{*}

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A growing number of experiments is currently opening up the transfermium region of nuclei for detailed spectroscopic investigations [1–3]. In the deformed nuclei in the nobelium region this allows an identification and mapping of single particle orbitals closest to the top end of the nuclear chart.

Initial in-beam measurements in the region focussed on γ -ray spectroscopy of even-even nuclei (e.g. ^{252,254}No, ²⁵⁰Fm), studying the ground-state yrast bands and allowing extraction of parameters such as the moments of inertia, and proving the deformed nature of these nuclei. More recently, it has become possible to do combined in-beam gamma ray and conversion electron spectroscopy with the SAGE spectrometer [4]. The first experiments have focused on the study of odd-mass transfermium nuclei and are currently being analysed. These experiments will yield data which can be used to determine the excitation energies and configurations of quasiparticle states in the region, and to compare them to the predictions of various theories.

An overview of the most recent results and the experimental techniques used will be presented and the SAGE spectrometer in Jyväskylä will be discussed.

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