In-beam spectroscopy of ^{254}No

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Knowledge of the structure of very heavy elements is essential for the development of mean field theories which predict nuclear properties far from stability. Important input comes from the study of transfermium nuclei, the heaviest systems which are accessible using present-day in-beam spectroscopic techniques.

Development of spectrometers situated at the target position of RITU (JYFL) made progress in the study of these transfermium nuclei possible. An interesting case is that of ^{254}No. This nucleus can be produced via a fusion-evaporation reaction of a ^{48}Ca beam and a ^{208}Pb target with a cross section of 2 μbarn. Two different in-beam experiments studying ^{254}No have been carried out at JYFL. Firstly an in-beam conversion electron spectroscopic study was performed with the SACRED spectrometer [1]. More recently this nucleus has been studied via in-beam gamma-ray spectroscopy with the JUROGAM array [2].

The data taken with SACRED showed not only the lowest ground-state band transitions but also a distribution comprising high multiplicity electron cascades. The latter provides indirect evidence for the presence of high K-bands in ^{254}No.
Analysis of the in-beam gamma-ray spectroscopic study with JUROGAM allowed tentative extention of the rotational band built on the ground state of ^{254}No to a spin of $24\hbar$. Futhermore evidence for the decay of non-yrast states in ^{254}No has been observed for the first time. The nature of the non-yrast states and relation to data recently obtained in focal plane studies will be discussed [3].
Data from both experiments will be presented with emphasis on the in-beam gamma-ray spectroscopic results.

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