

Advances in In-Beam Spectroscopy using the JUROGAM Array

P. Jones¹ and P. Peura¹ for JUROGAM collaboration

¹ Department of Physics, University of Jyväskylä, P.O.Box 35 (YFL), 40014 Jyväskylä, Finland.

The JUROGAM spectrometer is the latest in a series of gamma-ray arrays to be coupled with the RITU gas-filled separator and incorporating the GREAT focal plane spectrometer. This forms one of the most powerful tools for in-beam gamma-ray studies using the recoil-decay-tagging technique. To date, well over 50 experiments have been completed, using in total over 8000 beam-time hours from the K-130 Cyclotron.

This *third-generation* spectrometer is more efficient ($\approx 4.2\%$ at 1.3 MeV) and due to the larger number of detectors, is far more sensitive for gamma-gamma detection than any previous array at RITU. The flexible design allows various other ancillary detectors to be coupled to the spectrometer.

As the hunt for weaker structures, lower production cross-sections and new modes for tagging become demanding, there is need for more intense beams, higher efficiency and higher counting rate capabilities. New initiatives have been undertaken to instrument JUROGAM with digital pulse processing electronics allowing higher counting rates and improved performance of the spectrometer. These developments lay the foundations for future physics goals.

In 2008, JUROGAM will be upgraded to an even more powerful spectrometer using a larger number of detectors for increased detection efficiency, and moreover flexibility for integration of other target-position spectrometers which are planned.

A brief overview of the JUROGAM spectrometer and campaigns will be presented, together with recent developments for instrumentation and plans for the future.