

Gamma-Ray Spectroscopy at TRIUMF-ISAC

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The 8π spectrometer, which consists of 20 Compton-suppressed germanium detectors and various ancillary devices, was once the world's most powerful array for studies of nuclei at high angular momentum, but upon moving to the TRIUMF radioactive beam facility, ISAC, has been transformed into the world's most powerful device dedicated to β -decay studies. Many improvements in the spectrometer have been made, including a highly precise and high-throughput data acquisition system, the installation of a moving tape collector, incorporation of an array of 20 plastic scintillators for β -particle tagging, 5 Si(Li) detectors for conversion electrons, and 10 BaF₂ detectors for fast-lifetime measurements. Experiments can now be performed where data from all ancillary detectors can be collected simultaneously, resulting in a very detailed view of nuclear structure through β -decay. A number of experimental programmes have been launched centered on the 8π spectrometer, including studies of super-allowed Fermi β -decay, halo nuclei, $N = 90$ transitional nuclei, and searches for high- K isomers in the mass $A \approx 180$ region. Highlights from some of these studies, demonstrating the range of physics issues that can be addressed and the capabilities of the spectrometer, will be presented.