M.Sc. Defence
Jack Bangay
Date: Tuesday June 22
Time: 2:00 pm
Place: SCIE 1504
University of Guelph

Thesis Title: Structure of ^{110}Cd studied with β-decay of ^{110}In and (n,n'γ) reaction

^{110}Cd has long been considered a paradigm of both the Vibrational Model and the U(5) symmetry of the Interacting Boson Model (IBM). However, recent studies on other Cd isotopes show a breakdown of vibrational motion at the 3-phonon level.

The nuclear structure of ^{110}Cd has been studied with the $(n, n'\gamma)$ reaction performed at the University of Kentucky and the β-decay of ^{110}In performed at TRIUMF using the 8π Spectrometer. A complete level scheme has been constructed using excitation functions, angular distributions, and a $\gamma\gamma$-coincidence matrix. Level lifetimes have been determined using the Dopple-shift attentuation method.

The results of the experimental work have been compared to both Vibrational Model and IBM-2 calculations. Neither model is able to satisfactorily reproduce the experimental results, leading to doubts about the appropriateness of these descriptions.

Examining Committee:
Chair: Dr. Rob Wickham
Advisor: Dr. Paul Garrett
Advisory Committee Member: Dr. Carl Svensson