

# Summer Research Project -- Project Proposal

Form 1

Summer student research opportunities are available and sponsored by NSERC as Undergraduate Summer Research Awards (USRA) or as part of the financial need-based award program provided by the University of Guelph known as the Undergraduate Research Assistantships (URA).

Department: Physics

Name and Title of Proposed Supervisor: Prof. Paul Garrett

Proposed Starting Date: April 30, 2012

Application:

Title of Proposed Research Project: Analysis of beta-decay data obtained with the  $8\pi$  spectrometer

URA

USRA

Outline of Proposed Research Project:

The  $8\pi$   $\gamma$ -ray spectrometer, located at the TRIUMF radioactive beam facility in Vancouver, is the world's most powerful device used for  $\beta$ -decay studies. We have a very active programme of investigations for weak interaction studies, through high-precision superallowed Fermi  $\beta$  decay, as well as nuclear structure. The nuclear structure studies utilize in addition to the 20 germanium detectors for  $\gamma$ -ray detection, 5 Si(Li) detectors for conversion electrons, and 10 BaF<sub>2</sub> or LaBr<sub>3</sub> detectors for fast lifetime measurements. Experiments performed with the  $8\pi$  spectrometer thus involve a very complex data set. The research to be performed by the student involves the analysis of data from  $8\pi$  experiments. The student will use existing, sophisticated analysis codes to perform the data analysis. This will involve analyzing coincidence relationships to build the excited-state level scheme, fitting spectra to determine key branching ratios, etc. The student will be based at the University of Guelph. Travel to TRIUMF in Vancouver and other locations may be necessary to support the group research.

**PLEASE PRINT:**

**Contact Information for students to direct their application:**

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Signature of Proposed Supervisor : \_\_\_\_\_

Signature of Head of Department: \_\_\_\_\_

**Printed** Name of Head of Department: \_\_\_\_\_

Date: \_\_\_\_\_

