Title: **Calibrating the Asteroseismic Scaling Relations**
Deadline: **February 8, 2022**
Sponsor: **Kelly Hambleton**
Solicitation Funding: **External (NASA)**

Solicitation Summary

Kelly Hambleton is seeking to employ a Villanova University undergraduate student to work in the field of binary stars and asteroseismology. The selected candidate will be fully funded for 10 weeks starting June 1st (including room and board, a stipend and funding for the AAS in January 2023). During the ten-week period, the student will work with the *Kepler* data, which they will extract from the MAST website. Using the acquired data, the student will then learn how to generate a binary star model of an eclipsing binary with a red giant component. The results of the model will include fundamental stellar parameters (masses and radii). The student will then determine the mass and radius of the red giant component using asteroseismology. A comparison will be made between the asteroseismic mass and radius, and the mass and radius determined through binarity. The results will be used to validate and calibrate the asteroseismic scaling relations.

Solicitation Requirements

The research position is open to all Villanova undergraduates that are majoring in astronomy or a closely related field. Applicants need to provide:

- a current CV that highlights commitment to excellence in the applicant's current field of study;
- a 2-page proposal that discusses the scientific background and proposed work timeline;
- a 1-page narrative on expected outcomes and procedures; and
  a 1-page personal statement that conveys the suitability and interest of the applicant.

To apply for this position, interested students need to submit their applications by the deadline in the form of a single pdf document. Only electronic submissions are accepted; email your applications to kelly.hambleton@villanova.edu. Any applications received after the deadline will be returned without review.

Solicitation Documents

In order to prepare a strong proposal, the following documents might be useful:

- Aerts, Chrisensen-Dalsgaard & Kurtz, Asteroseismology; ISBN 978-1-4020-5178-4
- Prša, Modeling and Analysis of Eclipsing Binary Stars; ISBN 978-0-7503-1288-2
- The approved ADAP proposal that describes this project, (contact kelly.hambleton@villanova.edu for a copy).

Solicitation Outcome Announcement

The review of solicitation material will begin on Feb 9, 2022 and a short-list will be assembled by Feb 14, 2022. The highest-ranking candidate will be informed and offered a position. In the event that the highest-ranking candidate accepts the position, the solicitation will be closed. Otherwise the position will be offered to the next highest ranking applicant until the position is filled.