SOLICITATION TITLE: FUNDAMENTAL PARAMETERS FROM RED GIANT PULSATIONS AND ASTEROSEISMIC SCALING RELATIONS
SOLICITATION DEADLINE: JAN 31, 2020
SOLICITATION SPONSOR: DR. ANDREJ PRŠA
SOLICITATION FUNDING: EXTERNAL (NSF)

SOLICITATION SUMMARY:

Andrej Prša's research group is seeking a Villanova undergraduate student for the summer research opportunity to work on determining fundamental stellar parameters (masses and radii) of red giant stars from asteroseismic scaling relations. The appointment is for 10 weeks, starting on June 1, 2019. The selected student will learn to query satellite data in fits file format from MAST, display light curves, determine asteroseismic parameters (ν_{max} and $\Delta\nu$) from stochastic, solar-like pulsations, and derive fundamental stellar parameters. The result of this work will be a stepping stone towards comparing fundamental parameters from asteroseismology and from binarity.

SOLICITATION REQUIREMENTS:

The research position is open to all Villanova *rising junior or senior* 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 3-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 aprsa@villanova.edu. Any applications received after the deadline will be returned without review.

SOLICITATION DOCUMENTS:

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

- Approved proposal to the NSF, http://aprsa.villanova.edu/files/pulsations.pdf
- Paper on solar-like pulsations, 2003PASA...20..203B
- Paper on treating red giant pulsations, 2018ApJ...859...64H

In addition to these, applicants are encouraged to use their own sources of information.

SOLICITATION OUTCOME ANNOUNCEMENT:

The review of solicitation material will begin on Feb 1, 2020 and a short-list will be assembled by Feb 14, 2020. 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.