SOLICITATION TITLE: BINARY STARS IN THE ERA OF BIG DATA ASTRONOMY
SOLICITATION DEADLINE: JANUARY 31 2020
SOLICITATION SPONSOR: ANGELA KOCHOSKA
SOLICITATION FUNDING: NOT SECURED

SOLICITATION SUMMARY

Post-doctoral fellow Angela Kochoska is seeking an undergraduate student for a summer research opportunity to work on developing and testing a pipeline for automatic classification and analysis of binary stars. The appointment is for 10 weeks, starting on June 1, 2020. The project will involve work on simulated time-series data based on observing strategies from past and present large sky surveys, like Kepler, TESS, Gaia and LSST. Using machine learning and statistical methods as well as different modeling codes, the student will study the effects of different data availability (light curves, spectra, radial velocities parallaxes, etc.), detrending, sparsity and noise on the validity of parameter estimation through an automated pipeline. The goal of the project is to quantify the potential benefits of a fast, automated analysis approach over manual analysis.

APPLICATION REQUIREMENTS

The research position is open to all Villanova undergraduates that are majoring in astronomy or a closely related field. Some experience with coding is preferred but not mandatory.
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 via email to angela.kochoska@villanova.edu. Any applications received after the deadline will be returned without review.

USEFUL SOURCES

The following sources can help the applicant for preparation of the proposal:
- Gaia EBs paper series: 2017A&A...602A.110K through 2017A&A...606A..92M
- Kepler EB papers: 2012AJ....143..123M and 2016AJ....151...68K
- Statistics, data mining and ML in astronomy book: 2017ConPh..58...99I

Applicants are also encouraged to use their own sources.

OUTCOME ANNOUNCEMENT

The review process will begin February 1st 2020 and the position will be offered to the highest ranking applicant no later than February 14th. The solicitation will be closed if the applicant accepts the offer, otherwise it will be offered to the next highest ranking applicant until the position is filled.