

SOLICITATION TITLE: Barycentric and Asymmetric Transverse Velocities
SOLICITATION DEADLINE: Jan 31, 2020
SOLICITATION SPONSOR: Dr Kyle Conroy
SOLICITATION FUNDING: VURF/Department

Precise timings of eclipses are often measured to look for trends over long time baselines. These trends can suggest many different physical effects including apsidal motion, mass transfer, or the presence of a third body in the system. Barycentric and Asymmetric Transverse Velocities (BATV) is a small contribution that causes an *apparent* shift in the timing of eclipses caused by the motion of the system on the plane-of-the-sky. The selected student will attempt to apply the theory of BATV to real observational data. Several possible directions of study could include: focusing on one of the “uses” of BATV (apsidal motion, triples, estimating mass ratios, etc) and trying to find systems in the literature with observable contributions; applying more recent GAIA data; or considering the impact of Earth’s motion.

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 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 kyle.conroy@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:

- BATV paper (Conroy+ 2018)

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.