## Abstract Submitted for the NES19 Meeting of The American Physical Society

## Observation of soft X-ray transient binary system XTE 1118+480

SEAN BYRNE<sup>1</sup>, Central Connecticut State University — One way to learn about black holes is by watching companion stars in binary systems. Soft X-ray transients (SXTs) are typical targets of this method. SXTs have episodic outburst that increase the flux by orders of magnitude for a relatively short time. When the system returns to quiescence, the luminosity is dominated by the companion star. The companion star is non-spherical due to the tides exerted by the black hole, so the observed brightness varies over an orbit, an effect referred to as "ellipsoidal variations". The amplitude of the ellipsoidal variations is determined by the orbital inclination, the measurement of which is the goal of this project. Our specific target is an SXT called XTE 1118+480. The accretion luminosity varies with time, so we want to make repeated observations of the orbital variation to separate the stellar flux from the variable accretion flux. The orbital period is only 4.1 hours so a whole orbital light curve can be created in a single night of observations. The light curves can then be analyzed, the orbital inclination obtained, and from that the mass and distance of the system can be determined.

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