

## **MEASUREMENT OF THE SPIN-ORBIT ALIGNMENT IN STELLAR BINARIES**

Timothy Brown  
University Of Colorado  
GO30029

We propose to measure the spin-orbit alignment of the primary in low mass-ratio eclipsing binaries. Although spin-orbit alignment is a subject of intense study for transiting planetary systems, only a few measurements have been done so far for stellar eclipsing binaries. The angle between the star's spin axis and orbital angular momentum axis is a key piece of information in the study of stellar binary formation and evolution. Naively one would expect the three angular momentum axes, the self rotation of both stars and the orbital angular momentum, to be well aligned as they all originate from the angular momentum of the same primordial molecular cloud. However, this simple view could be misleading. Several processes have been proposed in the literature that result in misalignment. Moreover, misalignment for both stellar components was already identified for one system, out of only three for which the spin orbit angles were accurately measured. Our measurement technique was never applied before and requires the very high precision photometry provided by Kepler. Our proposal will significantly extend the science done by Kepler.