

## **THE CURIOUS LONG TERM PHENOMENA OF C-TYPE RR LYRAE STARS**

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RR Lyrae variable stars are pulsating stars that are useful objects in the study of Galactic structure and evolution, and stellar astrophysics. They are easily identifiable in photometric surveys with their distinctive light curve shapes. However, we focus our study on the Bailey c-type RR Lyrae stars (RRc), which are relatively shorter period and less numerous than the ab-type stars. The RRc stars are often confused with eclipsing binary stars via the light curves, and candidate stars are often hard to classify, even with good time-series sampling. We propose to look at four RRc stars discovered with the Q0/Q1 Kepler data that exhibit additional periodic and/or long term phenomena, unusual for this type of star. We will use Fourier decompositions techniques as well as a new automated stellar classification software to confirm the status of these RRc stars. We will also study the new long term phenomena with the additional quarters and identify the source(s). Coupled with the Kepler data, we will obtain ground based photometric and spectroscopic followup data.