

The Cataclysmic Variable AC Cnc: Accretion Variations and Stunted Bursts Revealed by *Kepler2*

Eric M. Schlegel¹ and R. Kent Honeycutt²

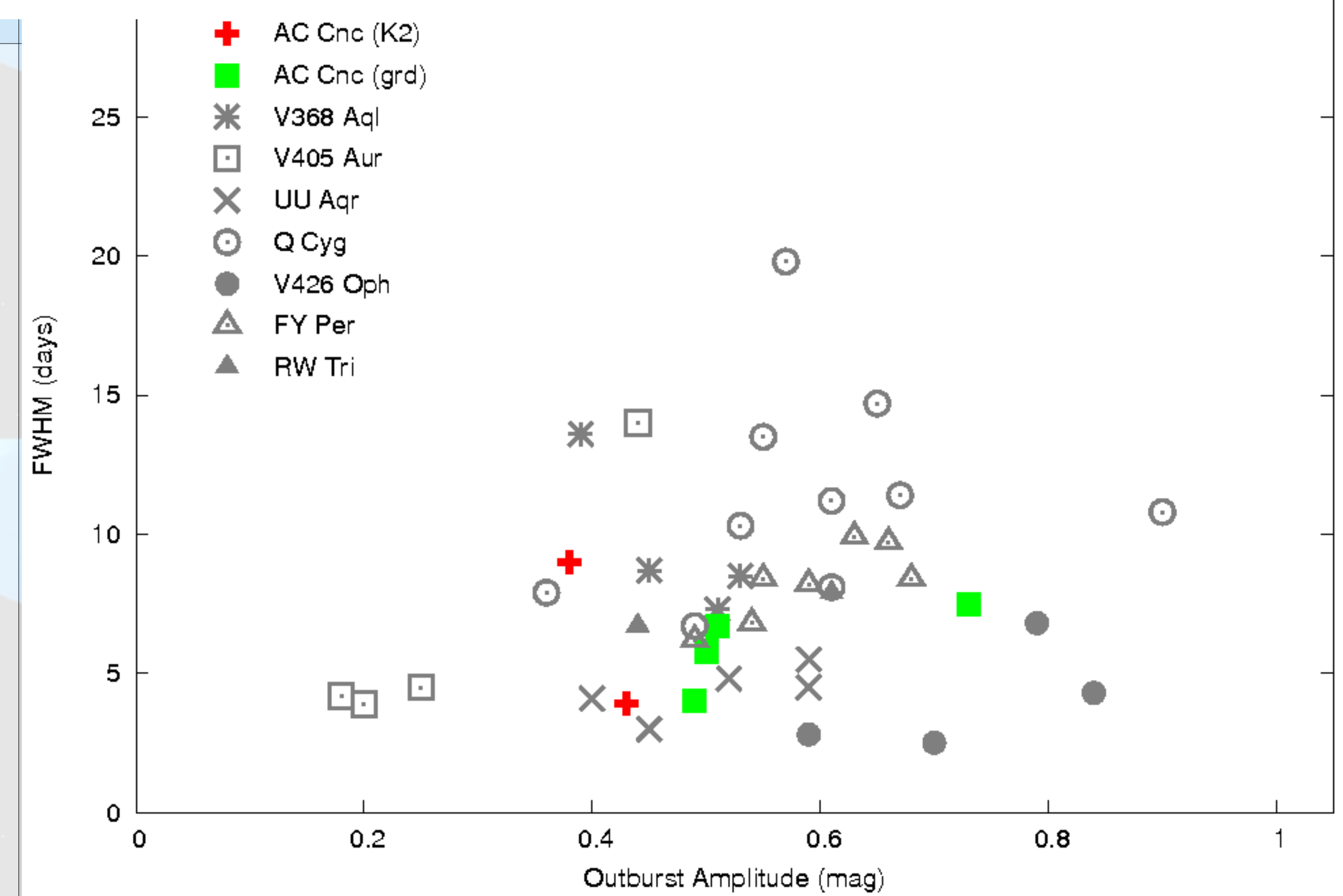
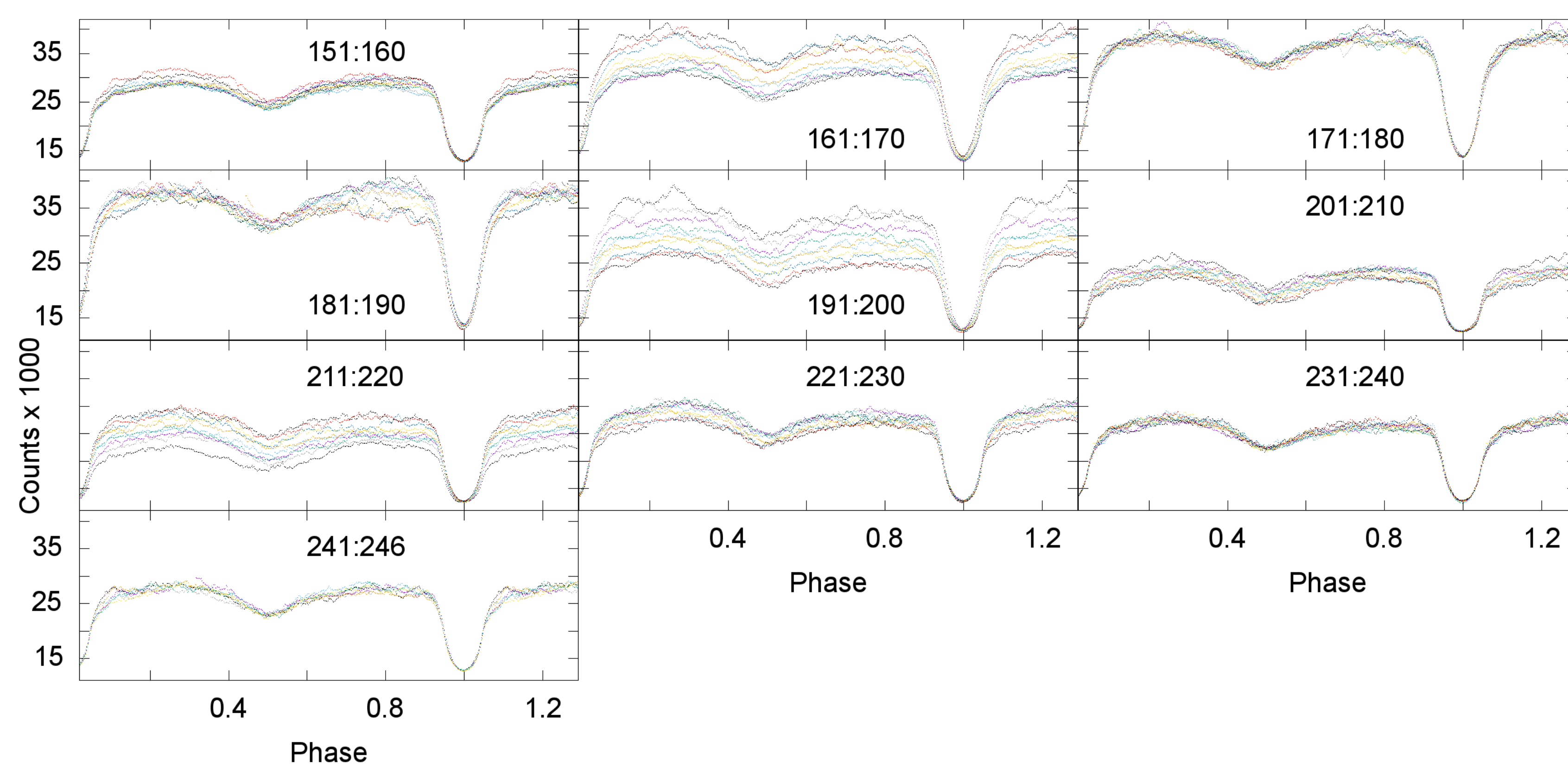
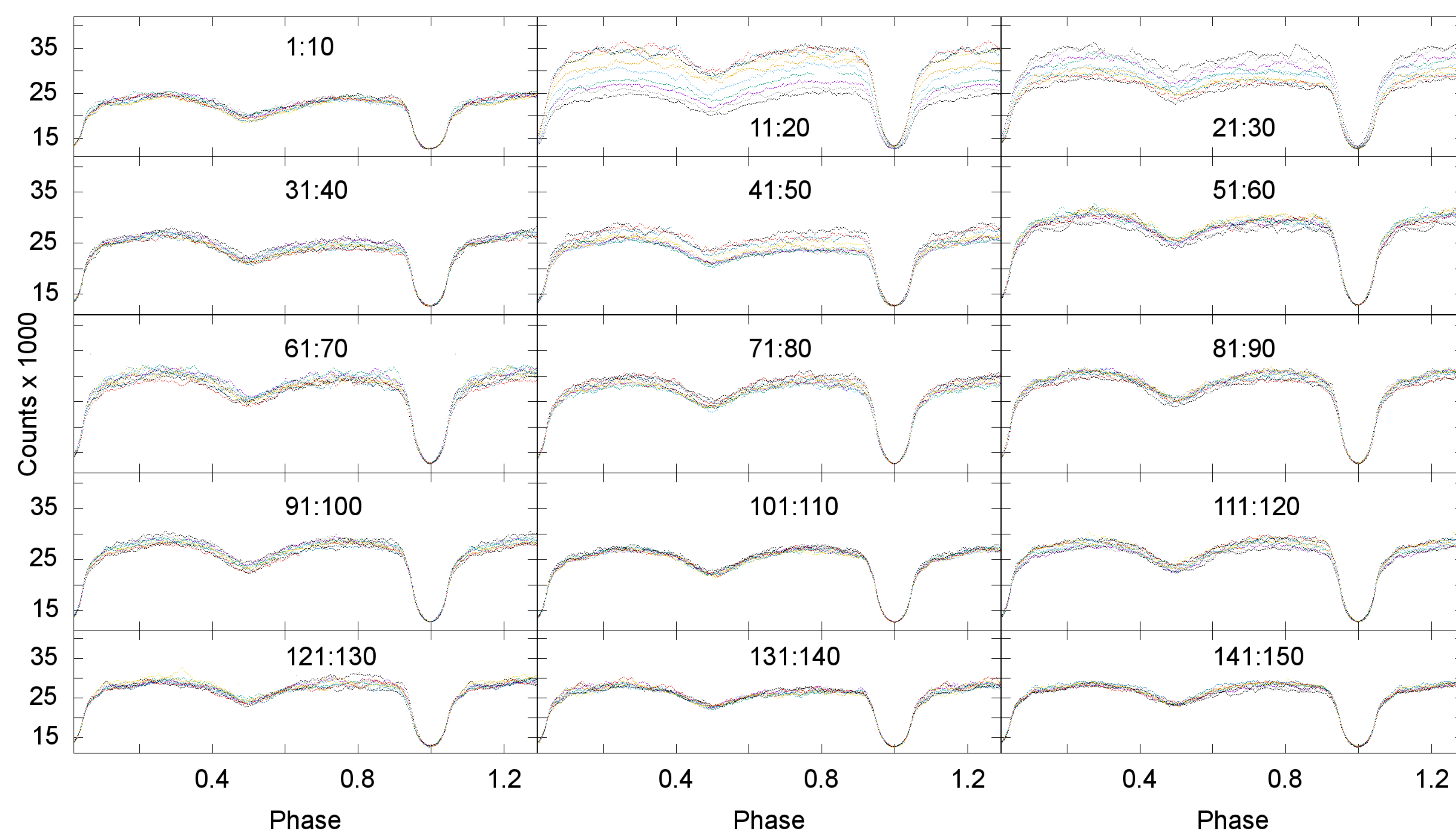
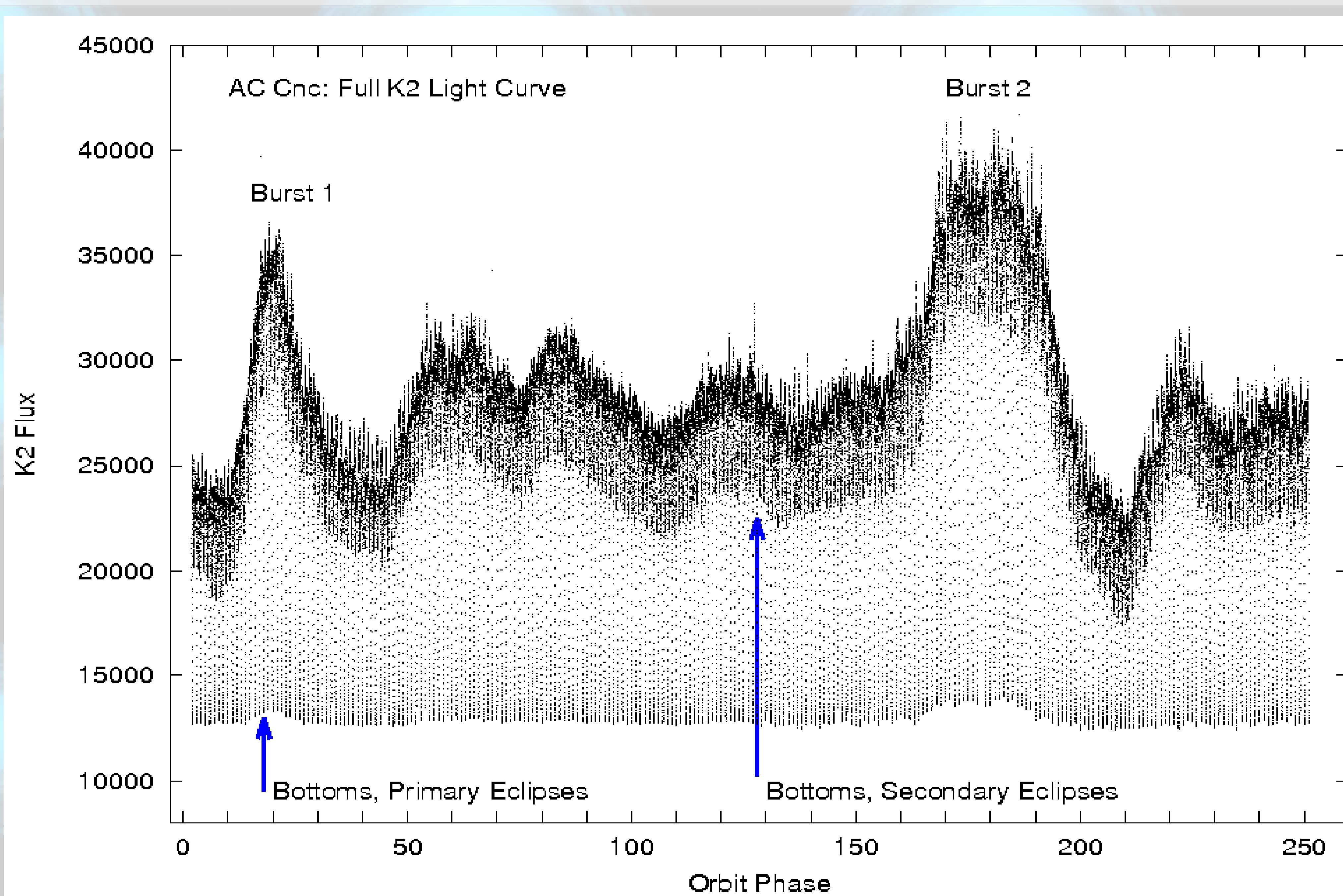
¹Vaughan Family Professor, Physics & Astronomy, The University of Texas at San Antonio

²Department of Astronomy, Indiana University

Abstract: We describe the K2 observation, using Kepler at 1-minute cadence, of the nova-like cataclysmic variable AC Cnc. The K2 data set lasted 74 days, covered 246 eclipses, and yielded 106,703 photometric measurements. This CV exhibits stunted outbursts and we describe them in relation to other stunted-bursting CVs. The light curve shows **no** evidence of disk brightening before either burst, suggesting that mass transfer is not the answer.

<<<< The K2 light curve of AC Cnc. There are two stunted bursts and a continuous evolution in and out of each burst.

Plot of FWHM vs amplitude for the stunted bursts of AC Cnc (K2 = red; ground = green) and other CVs exhibiting stunted bursts. The value of the K2 observations for stunted bursts: the 'continuous' nature of the observations reveals a constantly changing accretion disk. The idea of a 'disk state' may be a misleading viewpoint.



Essentially *none* of the orbits reveal evidence of a pre-eclipse bright spot. Further, an enhanced bright spot does *not* occur prior to either burst. This essentially requires the mass transfer to be steady, up to and through the burst.

Yet the disk clearly responds – compare orbits 1-10 with 11-20 or 151-160 versus 161-170. Furthermore, the eclipse widths do *not* change, so any disk 'enhancements' must occur *without* disturbing the eclipse profile.

This is a puzzle. We are working to generate eclipse maps for all of the K2 data and use them to investigate the secondary eclipses. Stay tuned!

This research was partially supported by a K2 grant to EMS and partially by the Vaughan Family endowment.