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Seeing the Evolution of Cataclysmic Variables for the First Time
BRADLEY SCHAEFER, Louisiana State University — Cataclysmic Variables are expected to have long term cycles, where the accretion rate changes greatly on time scales of centuries to millennia. For the first time, I and my colleagues can test the prediction by constructing century-long light curves for many cataclysmic variables. (1) Nova Aql 1918 (V603 Aql) is declining at the rate of 0.44+-0.04 mag/century from 1938-2013. (2) Nova Cyg 1876 (Q Cyg) has been brightening at the rate of 0.41+-0.05 mag/century from 1891-2013. (3) Nova Aur 1964 (QZ Aur) faded from 1980-2009 at a rate of 1.5 mag/century. (4) QZ Aur had its orbital period get shorter by 0.00028. (5) For recurrent nova T CrB, my 110,000 magnitude light curve from 1855-2013 shows a unique and weird structure wherein the star was in a high state (1.5 mag brighter than the usual quiescence) from -8 to -1 year and +0.4 to +5 years, after both the 1866 and 1946 eruption. (5) I have measured changes in the orbital period across the eruptions of T CrB (1946), U Sco (1999 & 2010), CI Aql (1946), and T Pyx (2011). All four recurrent novae ejected greatly more mass than they accreted in the prior inter-eruption time interval, so none of these recurrent nova can become Type Ia supernovae.

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