5/23/2013

Dear CBAers,

Sorry for the long silence. End-of-school-year crush, trying to run a conference, finish off papers, even baseball season (blush)... very deficient in celestial attention lately. Now it's time for a nearly total house-cleaning, and new round of stars. I'll discuss them mainly by type.

OLD NOVAE. Lately we've been involved lately in studying how classical novae fade: years, decades, centuries, and even millennia after the eruption. A simple working hypothesis is that CV secondaries basically never get over the heating they suffer at the hands of the erupting white dwarf - the effect just declines with age, fast at first and then slowly. Some benchmarks in this process - if the idea's correct - are T Pyx (secondary overwhelmed by the nova) and BK Lyn (staggered but not completely overwhelmed). One might be able to measure this by following novae for long intervals after they erupt. If possible, centuries... but if not, then as long as possible. Just a FEW years after eruption can be a critical time, since they can be determinative of two important-but-hard-to-know items:
(1) How long before accretion resumes, and at what rate?
(2) How hot is the white dwarf?

So we've cooked up a few decently-placed stars which we are tracking to answer these questions:

V1494 Aql (1999)
V1974 Cyg (1992)
V2491 Cyg (2008)
NR TrA (2009)
V1432 Aql (unknown and hypothetical).

I can't really assign priority to these stars. I love 'em all! In all cases we're looking for an orbital or quasi-orbital wave, generally a few hours. So if you observe a star for 5 hours and see no significant signal, then it's an unpromising target - move on. Otherwise, adopt it! (Since these all have a similar RA, they pretty much compete - and as usual, the science rewards are generally greatest if you invest heavily in one target.)

DWARF NOVAE

I haven't been personally gunning for these in the last year or so. They're rather

plentiful, and I guess I exhausted myself after ten years writing a recent paper on them. However, thanks to Enrique mostly, two have zoomed to my attention.

PNV J19150199+0719471. Wow! 11th magnitude and showing periodic waves. The first recorded outburst ever, and likely caught quite early. Observe it early, late, and often. Because of the brightness, consider using a V filter - not essential but somewhat helpful in data reduction (almost zero differential extinction) and in archiving. Enrique's comp star is the AAVSO 119 star (V=11.921), and check is the AAVSO 126 star (V=12.625). These stars will probably suffice until the dwarf nova gets quite faint.

CSS 1740+41 (actually J174033.5+414756). Another absolute glamor star. It has dived to 18th magnitude, but a good target if it rebounds.

DQ HERS

We're not doing a lot of these now, but let's not abandon them. For most of these stars, we need only "pulse-timing" runs - just long enough to accurately define the phase of their pulses. Usually that means 1-2 hours are enough - assuming that the star is reasonably bright, the period reasonably short, and the amplitude reasonably high. For stars failing on one or more of these criteria, a tad longer would be nice.

We especially seek beginning-and-end-of-observing-season time series. These observations are harder to get, but they nail down the cycle count between seasons, which allows derivation of the long-term (over many years) period change - which in turn permits measuring the accretion torque on the underlying magnetic white dwarf.

Good stars for June-July coverage are: V1223 Sgr, FO Aqr, AO Psc, V2069 Cyg, V2306 Cyg, V455 And, V1033 Cas.

SUI GENERIS. HS 1813+6122 ("Hamburg Schmidt"). A fascinating novalike star in Draco, about 15.3 mag. The light curve has shown periodic waves of greatly conflicting period in different years. We've never quite seen that behavior before. This star is not as flashy as the dwarf novae or novae described above... but are you a borealite who likes to set up your telescope in twilight and just let it run? If so, this is a good star for you.

AUSTRALITE SPECIALS. It's galactic-center season, and that means the southerners have now the lion's share of great targets. Plus the long nights. Here are four which we are cooking... or, for the last two,at least simmering.

GW Lib - excellent target, may have switched pulsation modes, or had an unobserved outburst recently. Are the 19 minute pulsations still present?

NR TrA - nova 2008, now showing a "supersoft" light curve.

IM Nor - short-period recurrent nova, with a beautiful light curve.
Unfortunately, so far only Berto has taken on the challenge of observing it - presumably because of its faintness (17-18). It would be wonderful to get some coverage from otherlongitudes (besides South Africa).

V617 Sgr - eclipsing "supersoft" source, probably with with a very fast change in orbital period.

Joe