AMNH SALT Science Results

Mike Shara

Nov 11, 2013

Recovering Quiescent LMC/SMC Old Novae

Mike Shara/David Zurek

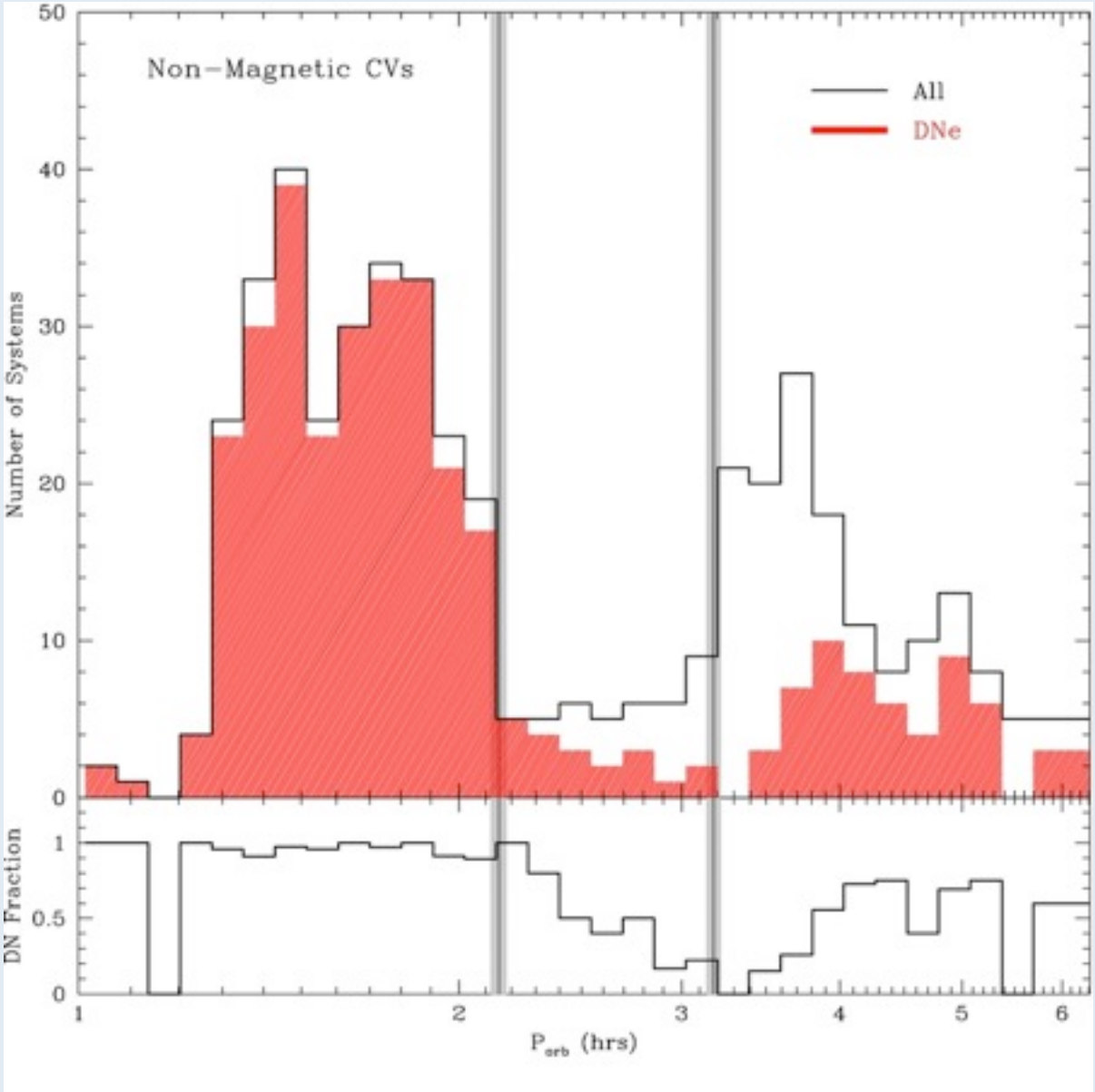
- What are the luminosities (hence mass accretion rates) of very old nova? (Galactic Cataclysmic variables often have poorly-known distances, hence luminosities)

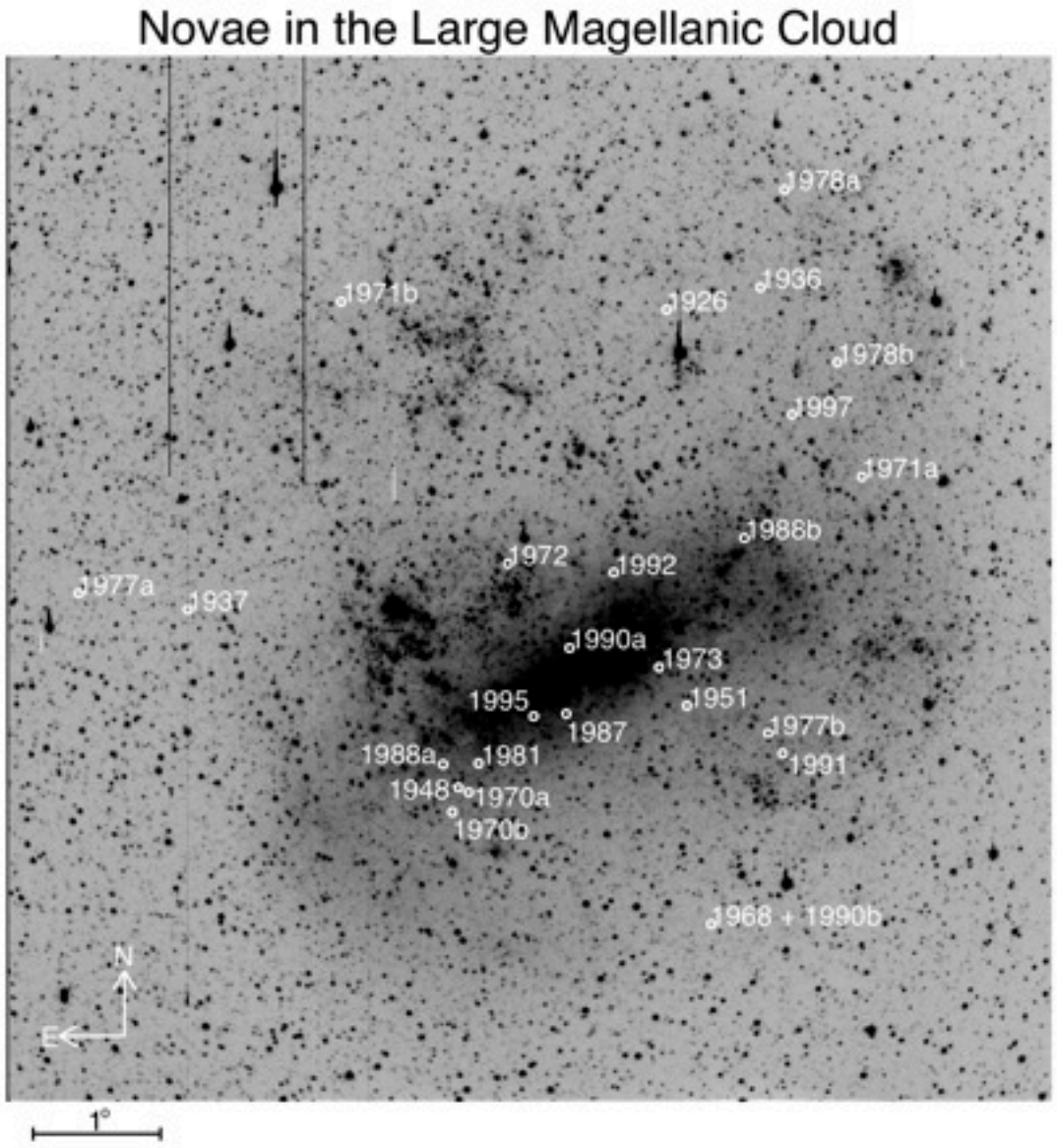
What is the orbital-period distribution of LMC/SMC cataclysmic variables?

Are Milky Way CVs different from LMC/SMC

Christian Knigge et al. 2011 ApJS 194 28

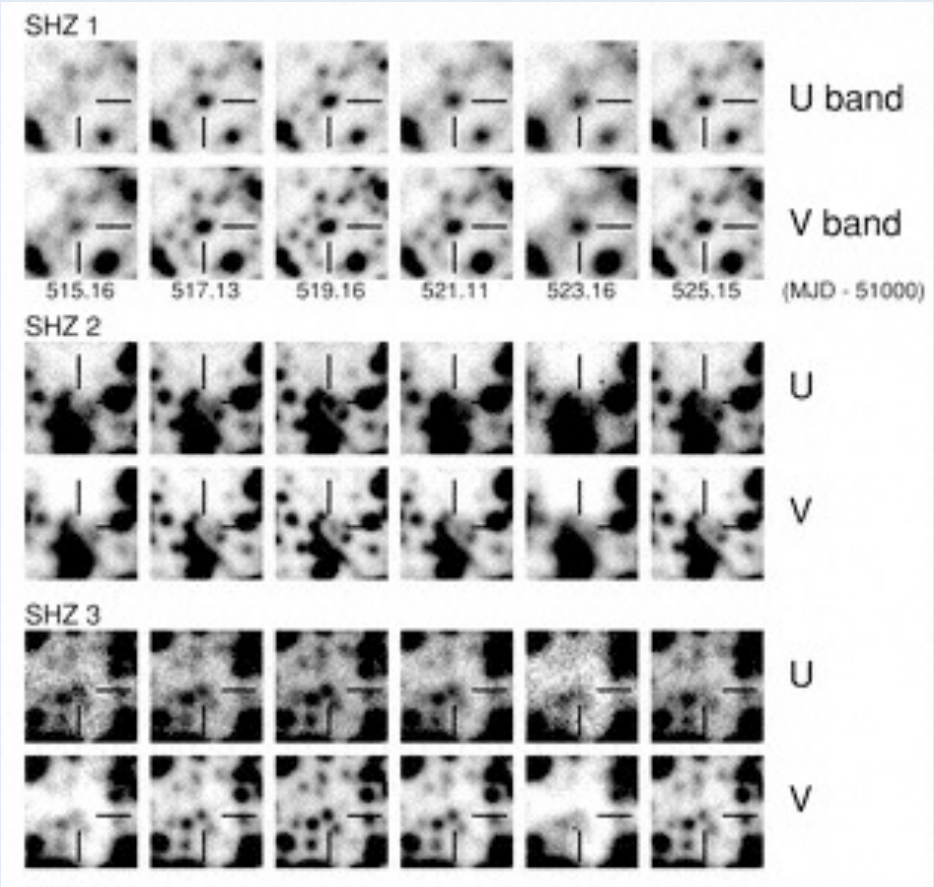
GALACTIC CATACLYSMIC VARIABLES



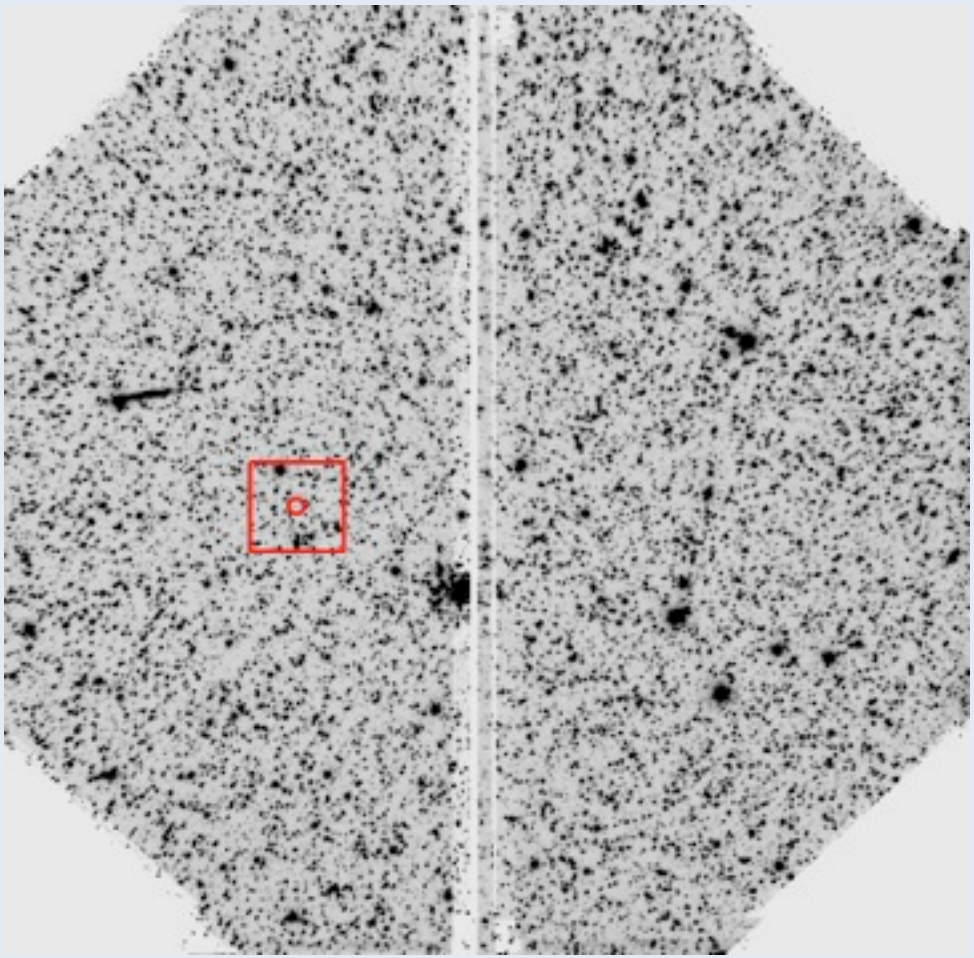


…And ~ 1 Million dwarf novae that I haven't found yet

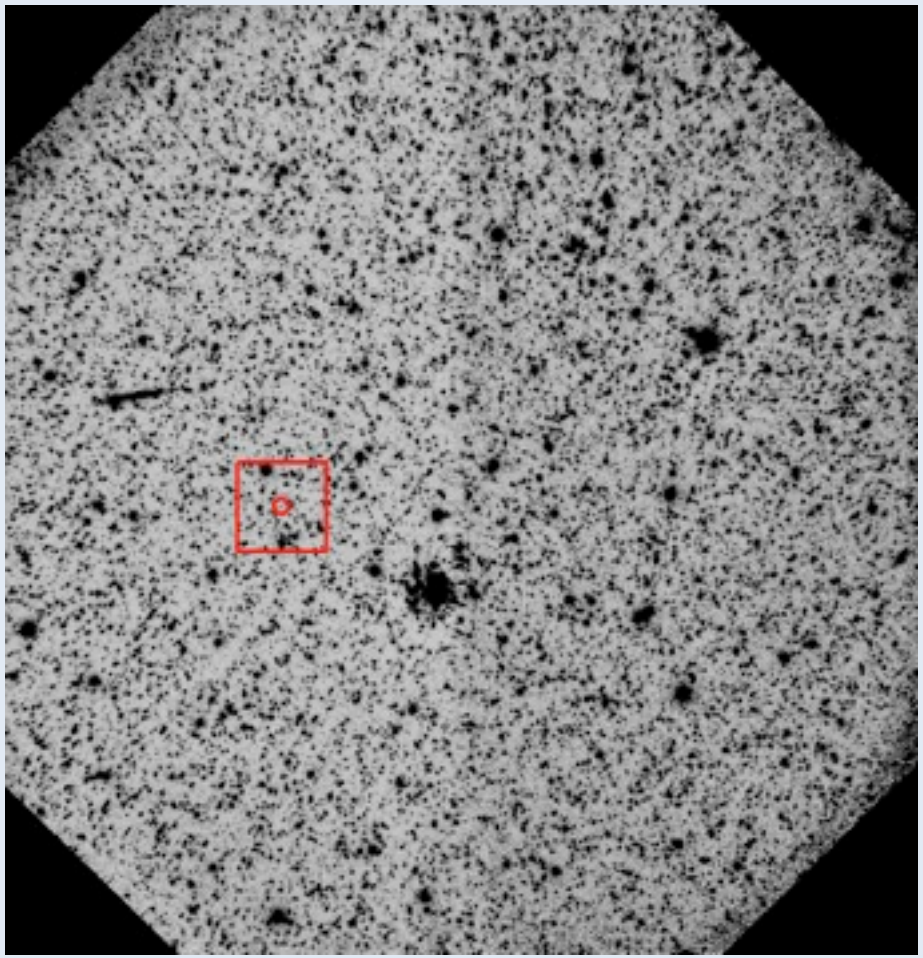
Erupting Dwarf Novae in LMC
6 nights on CTIO 4 meter



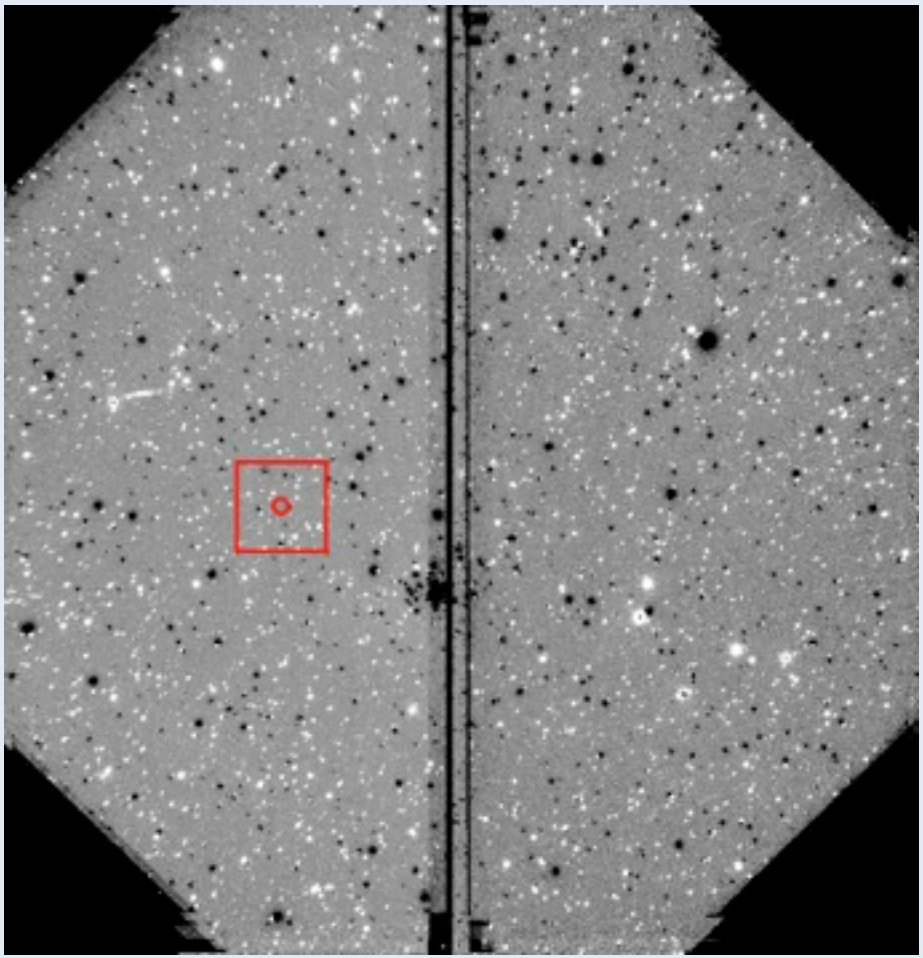
Field of Nova LMC 1936
Nova Coordinates measured to



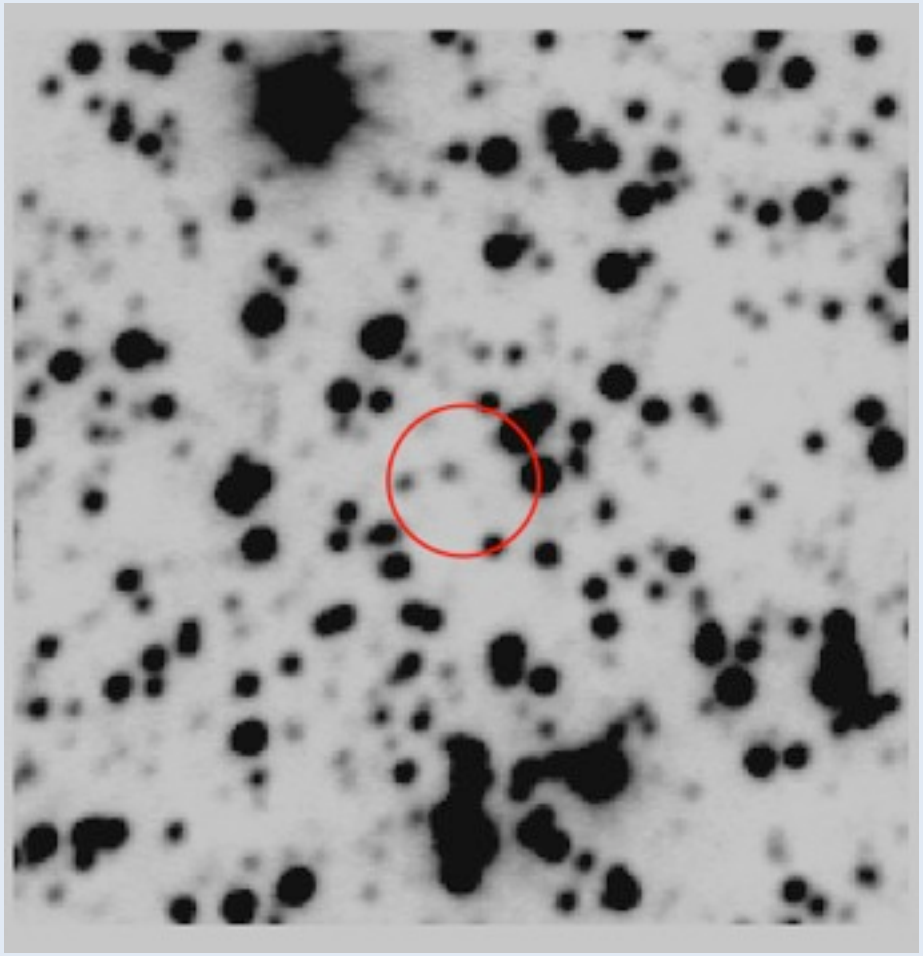
U-band 9x2 minutes



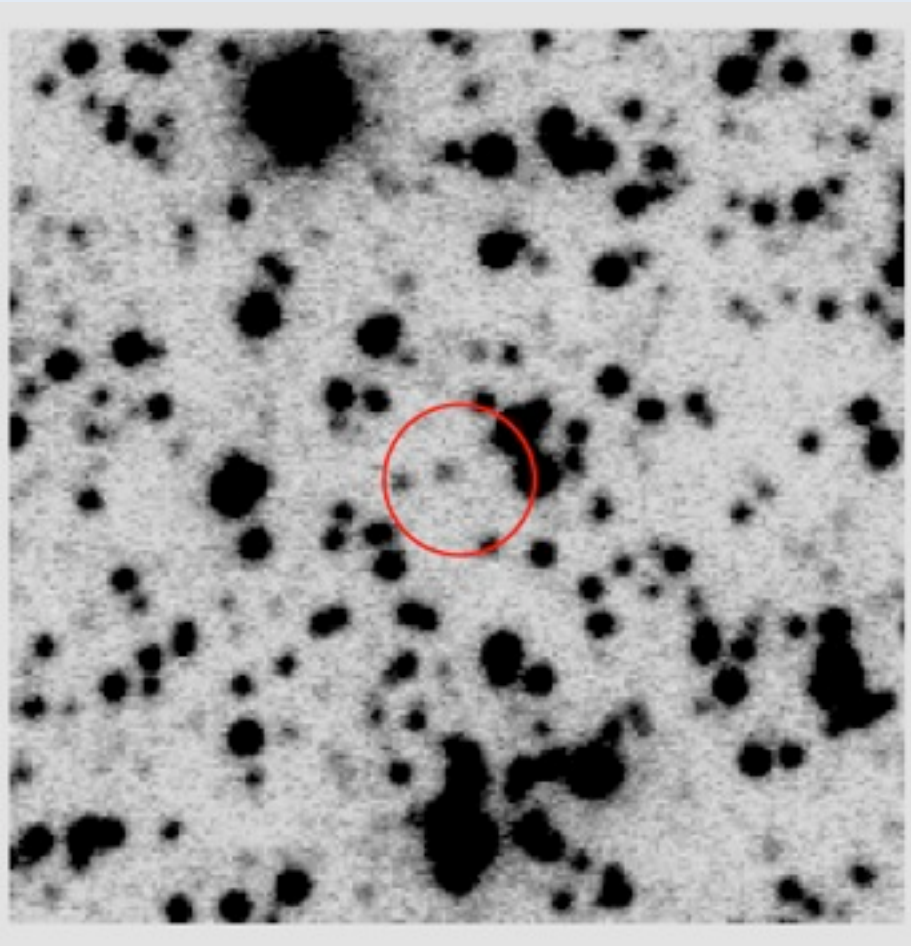
U-g subtracted image



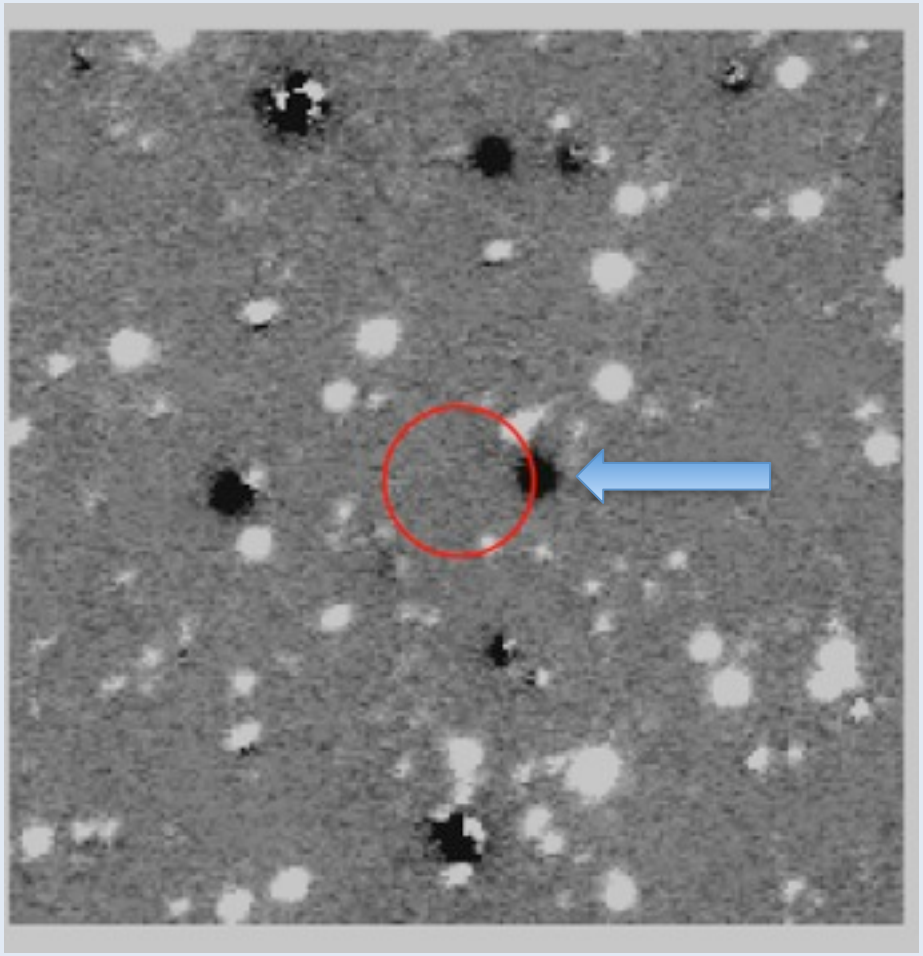
g-band



U-band



U-g
15” box, 2” radius circle



Warner MNRAS 222, 11

$(B-V)_{\text{old novae}} \sim 0 \quad U-g \sim -0.7$

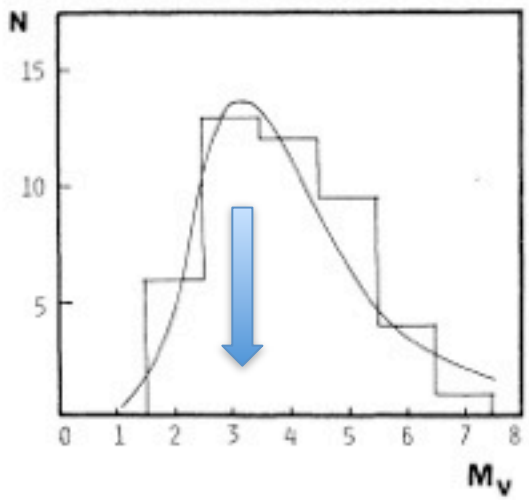
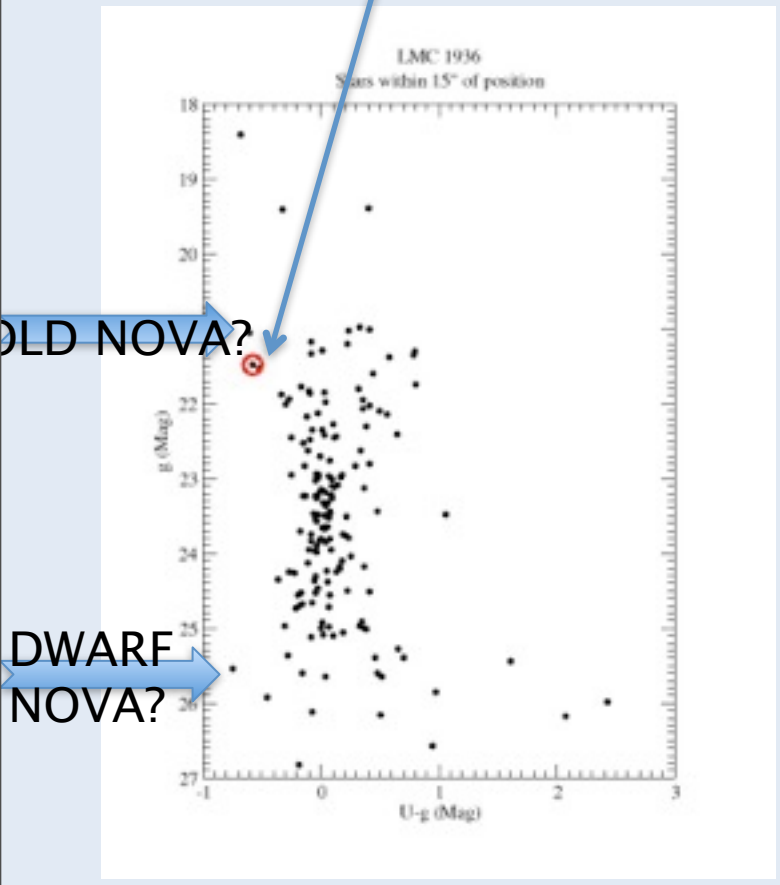


Figure 3. Frequency distribution (histogram) of absolute magnitudes compared with theoretical distribution (continuous curve) for randomly orientated discs broadened by a Gaussian with 1 mag dispersion.

As the range of M_V is caused predominantly by inclination effects, and not by observational error or intrinsic scatter, it is not appropriate to estimate an error for $\langle M_V' \rangle$ from rms errors. Instead, we consider the histogram, Fig. 3, in which the frequency distribution of M_V is shown. If there were no intrinsic or observational scatter the probability $P(M_V)$ follows from $P(\Delta M_V)$ which is proportional to $P(i) \propto \sin i$ for random orientations of orbits. Hence

A very strong candidate for confirmatory spectroscopy



$U_{candidate}$ ~ 21 mag

$g_{candidate}$ ~21.6

U-g ~ -0.6 i.e. VERY BLUE

$(m-M)_{LMC} = 18.5$

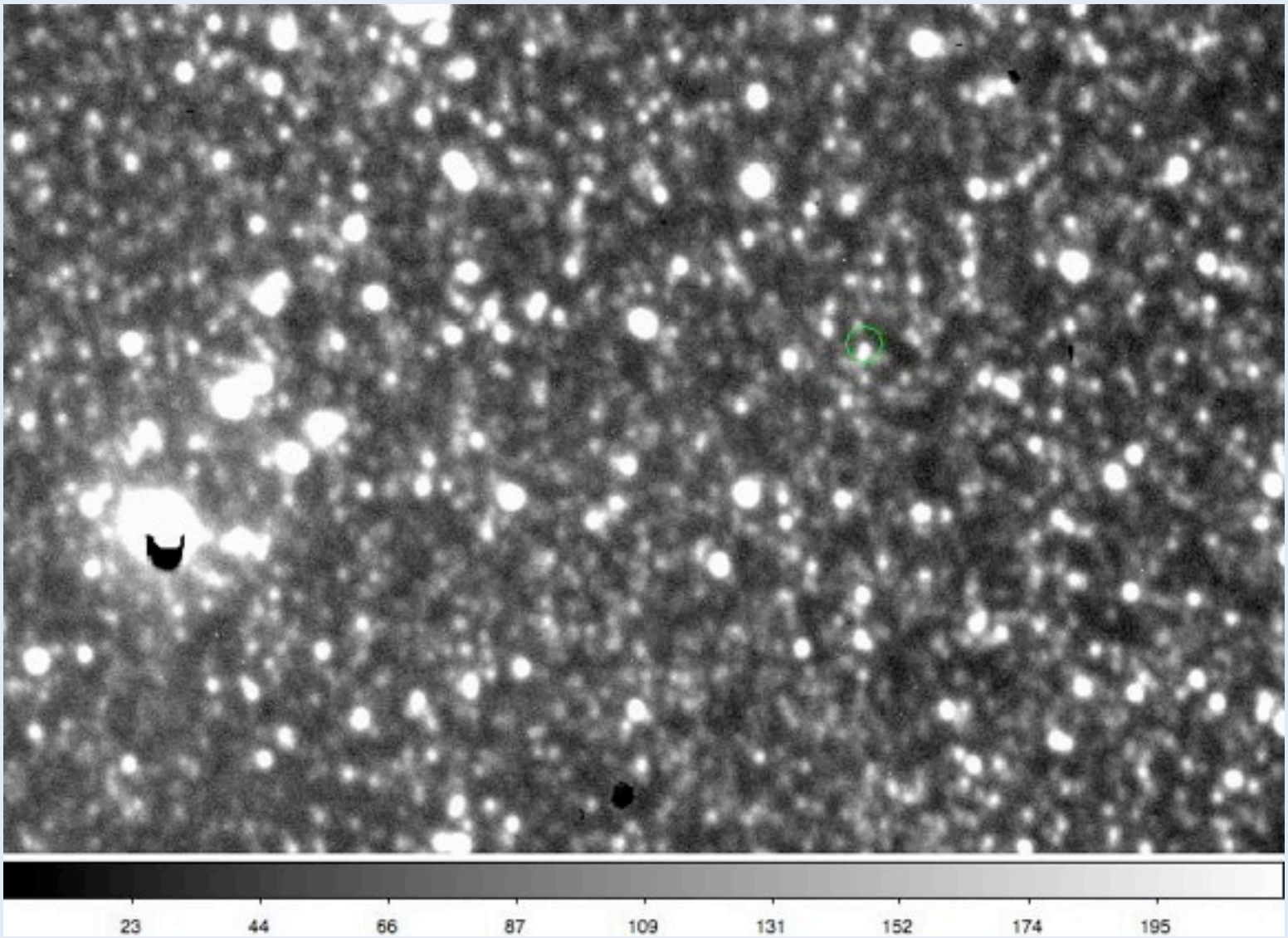
→

M_U ~ +2.5

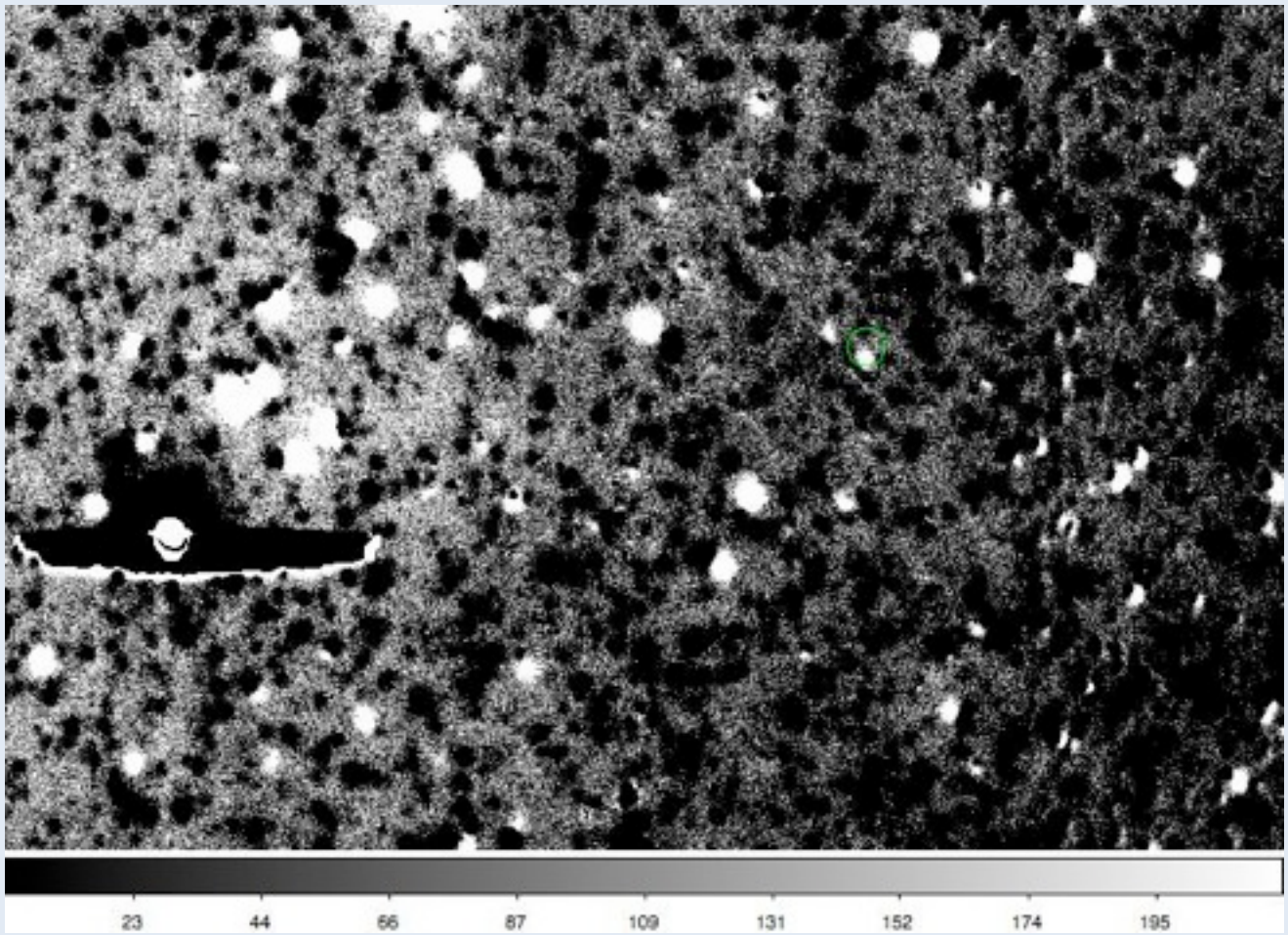
M_g ~ +3

Nova LMC 1990a

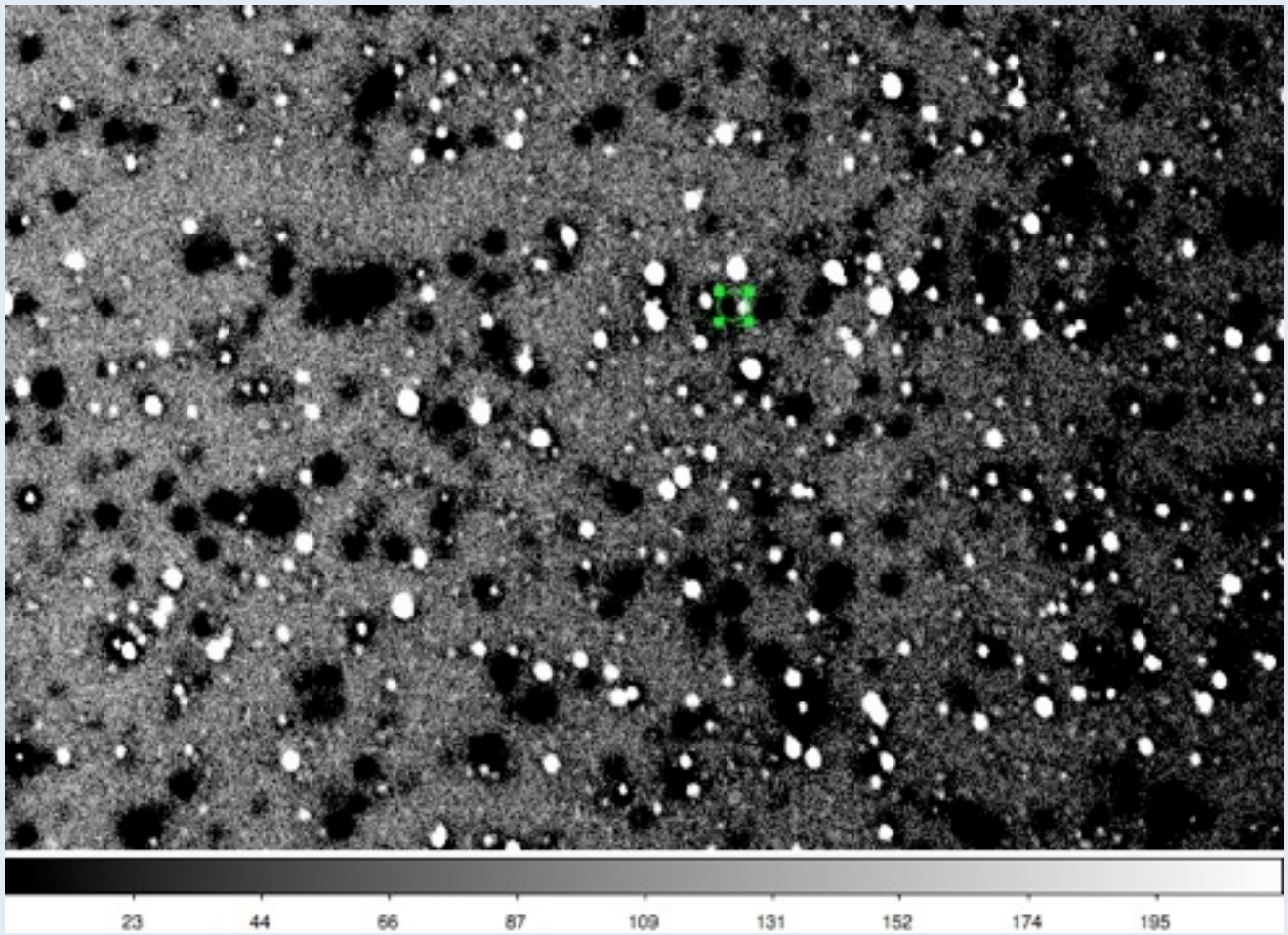
U-band



U-g...a second strong



…and a third…Nova LMC 1988b U-q



And four more…

RSS Followup Spectroscopy

- Not successful on 4 old novae…objects too faint
- SO…
- Will soon publish 7 current (U-g) candidates
- 2013-2014 : 10 visits to one old nova field to check its variability, and hunt for erupting dwarf novae
- And…
- 3 other programs have some useful data… at least one more year needed to gather