Classical and recurrent novae

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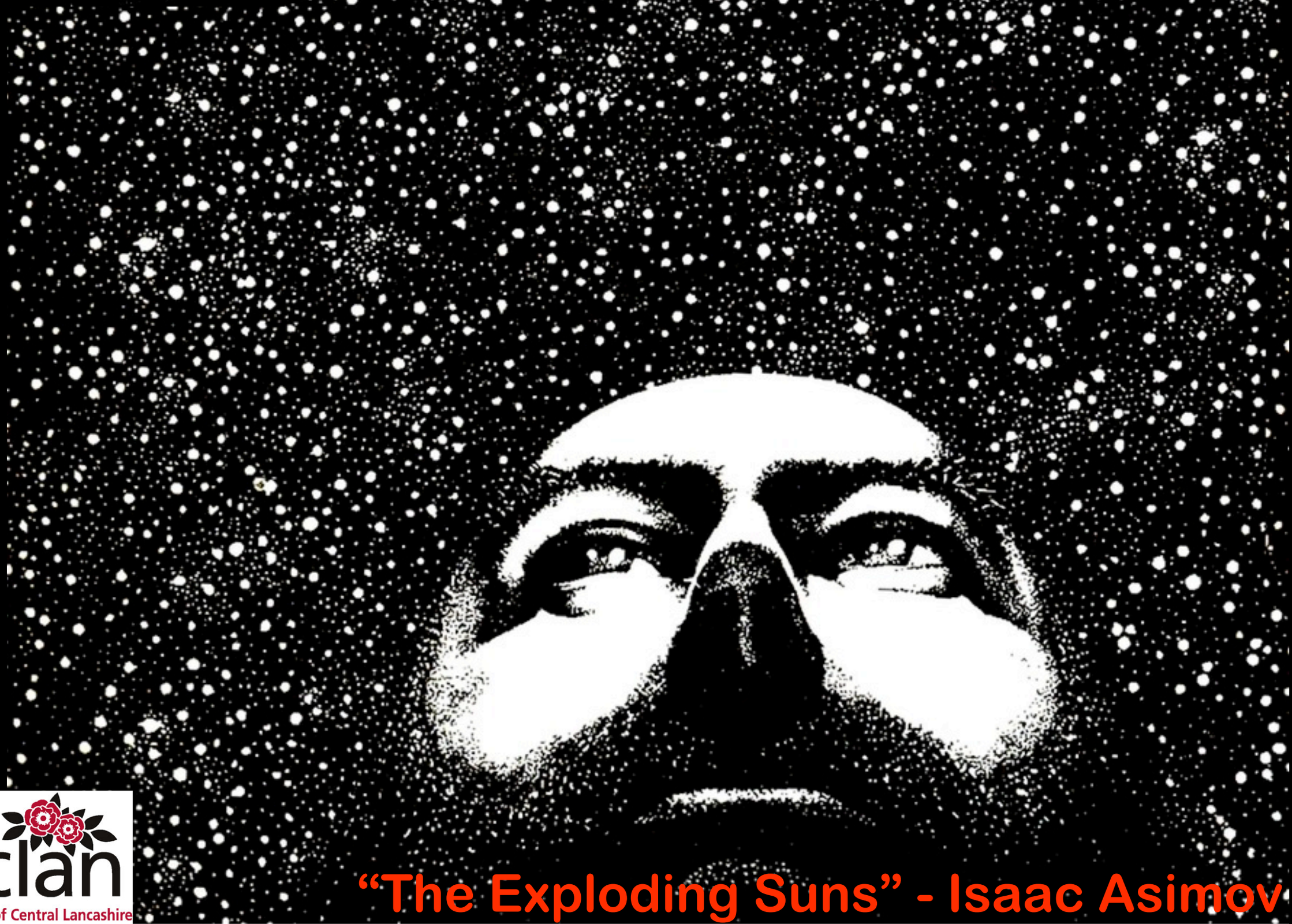

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“The Exploding Suns” - Isaac Asimov

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"Samguksagi"
(The History of the Three Kingdoms)

"GUEST STARS"
A.D 1073 AND
A.D 1074

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Hong-Jin Yang et al. 2005, A&A, 435, 207

MMRD Relationship

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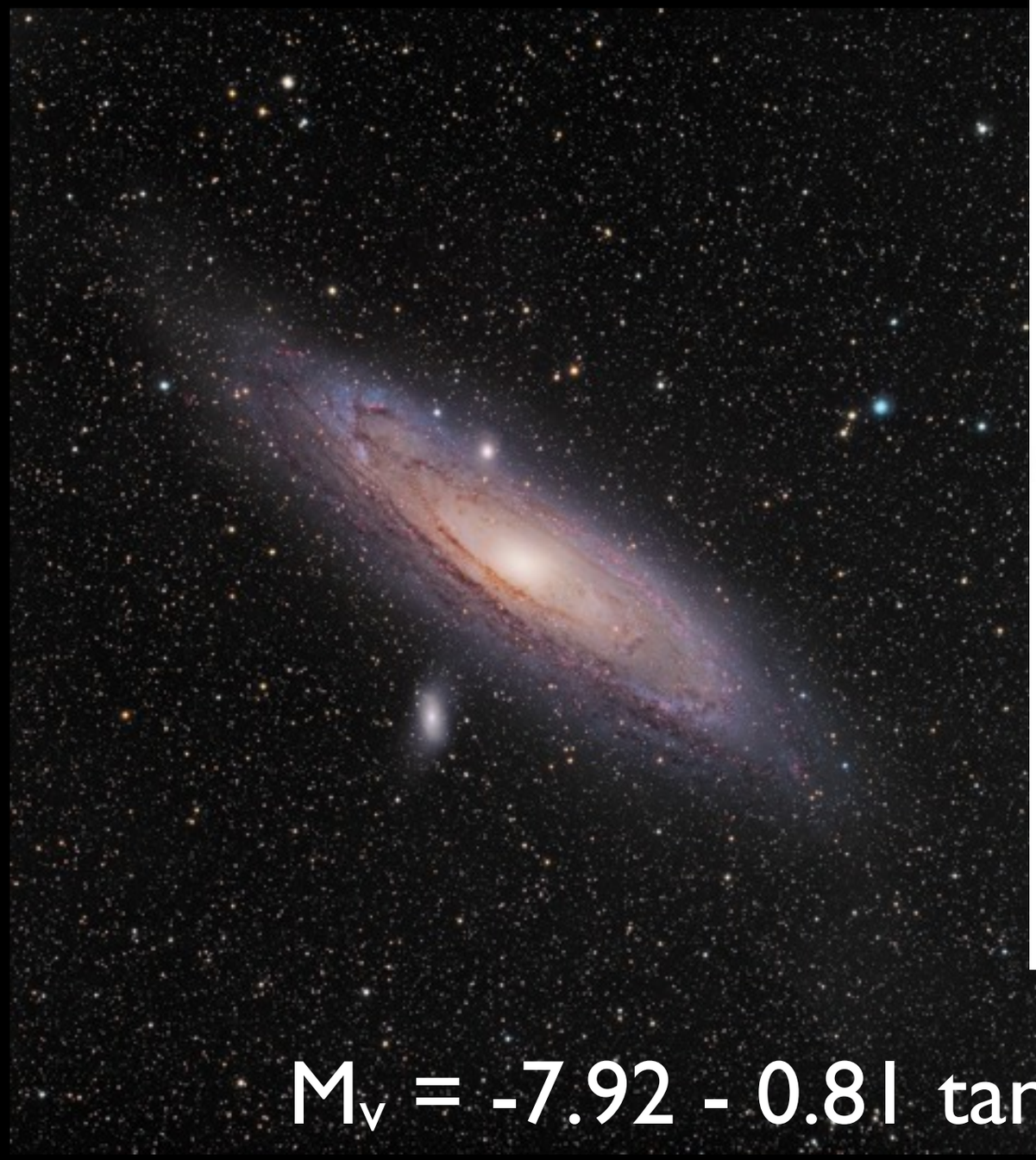

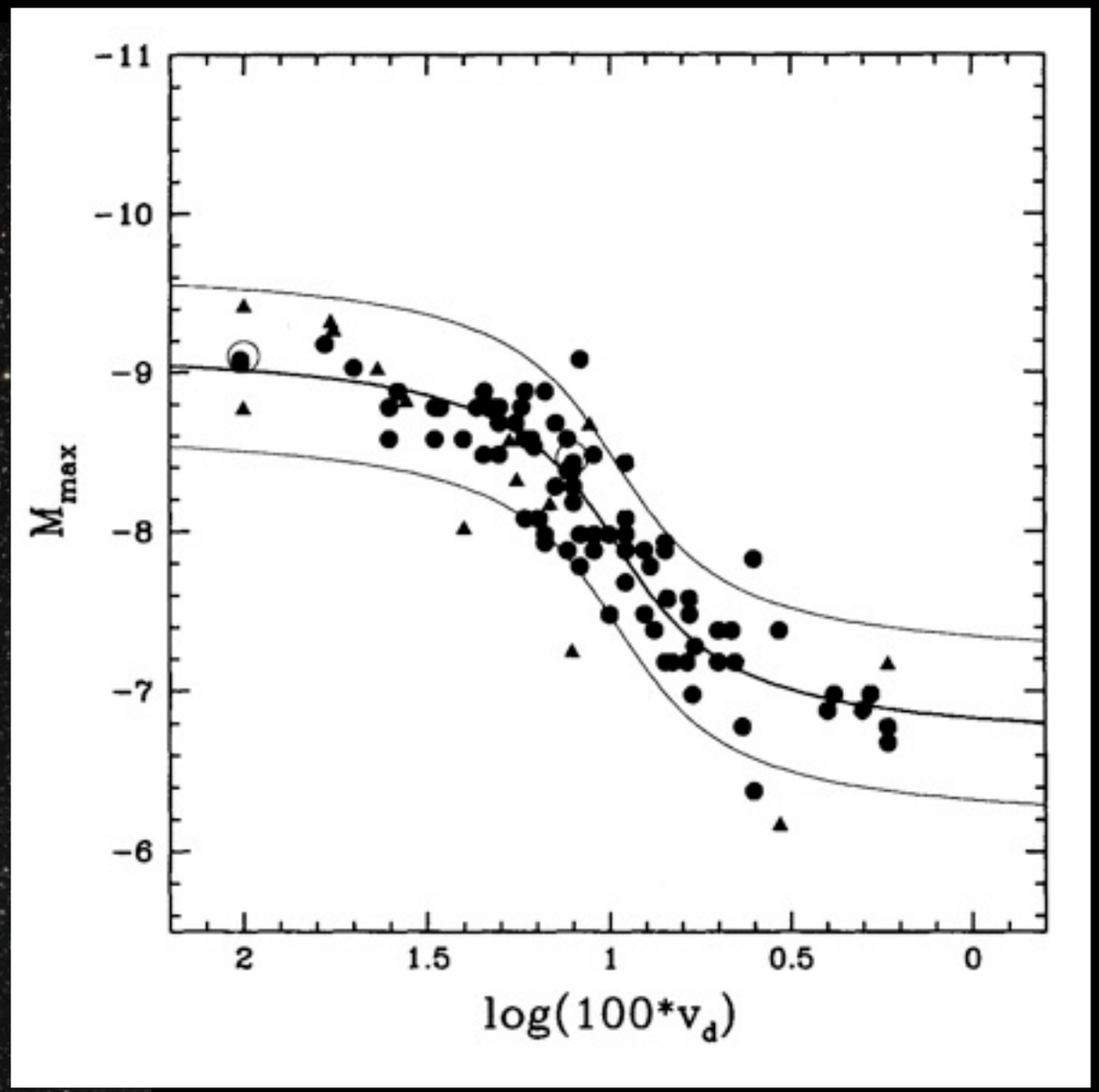

$$M_v = -7.92 - 0.81 \tan^{-1} 132 - \log(t_2)/0.32$$

Della Valle & Livio 1995, ApJ, 452, 704

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Bright Novae

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Year	Nova	Peak Mag	Notes
1902	GK Per	0.2	First light echoes
1918	V603 Aql	-1.4	The star of victory
1942	CP Pup	0.5	The socks star
1975	V1500 Cygni	2.2	Fastest on record
2007	V598 Pup	4.1	Nova everyone missed

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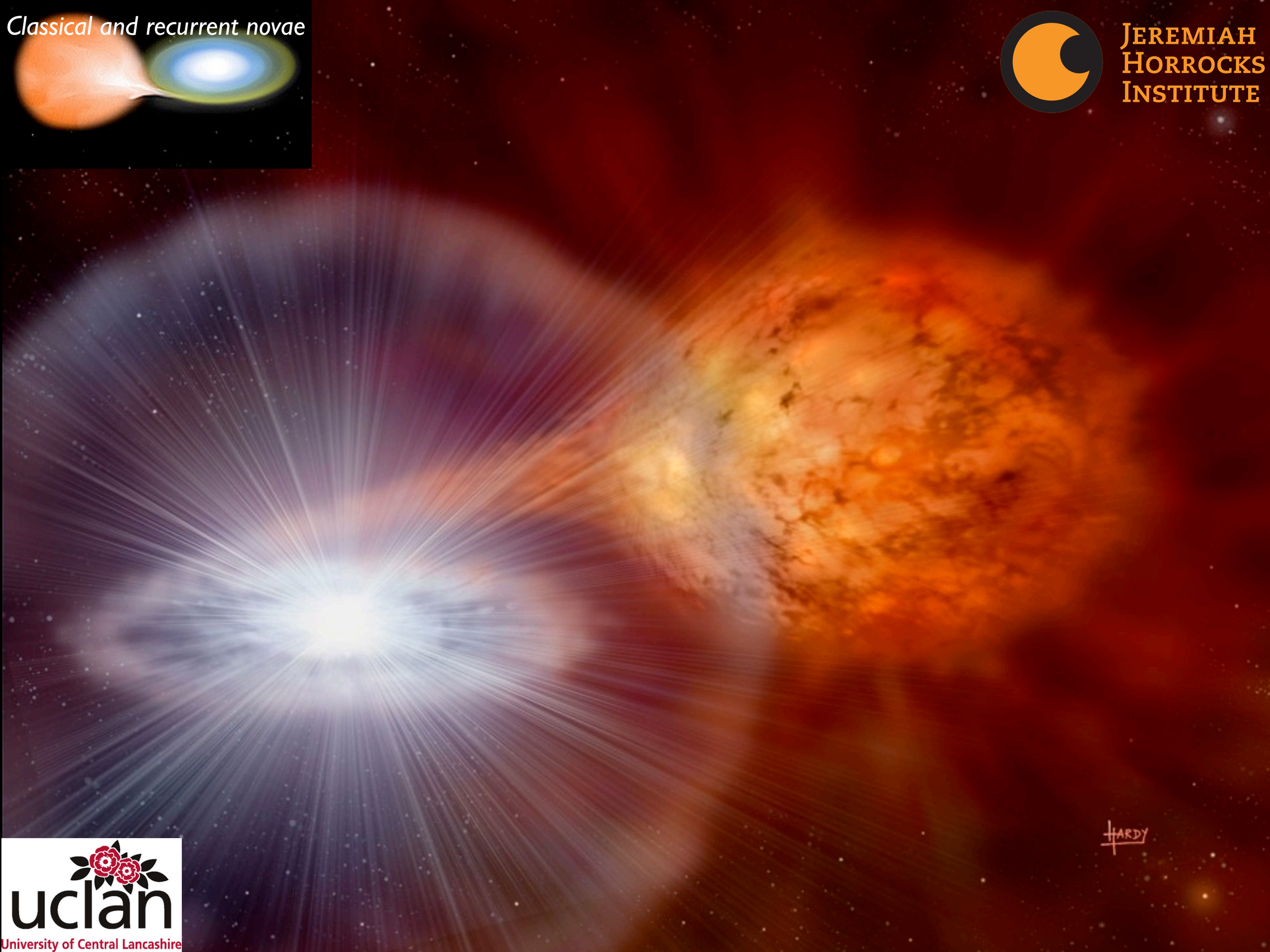

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Recurrent novae

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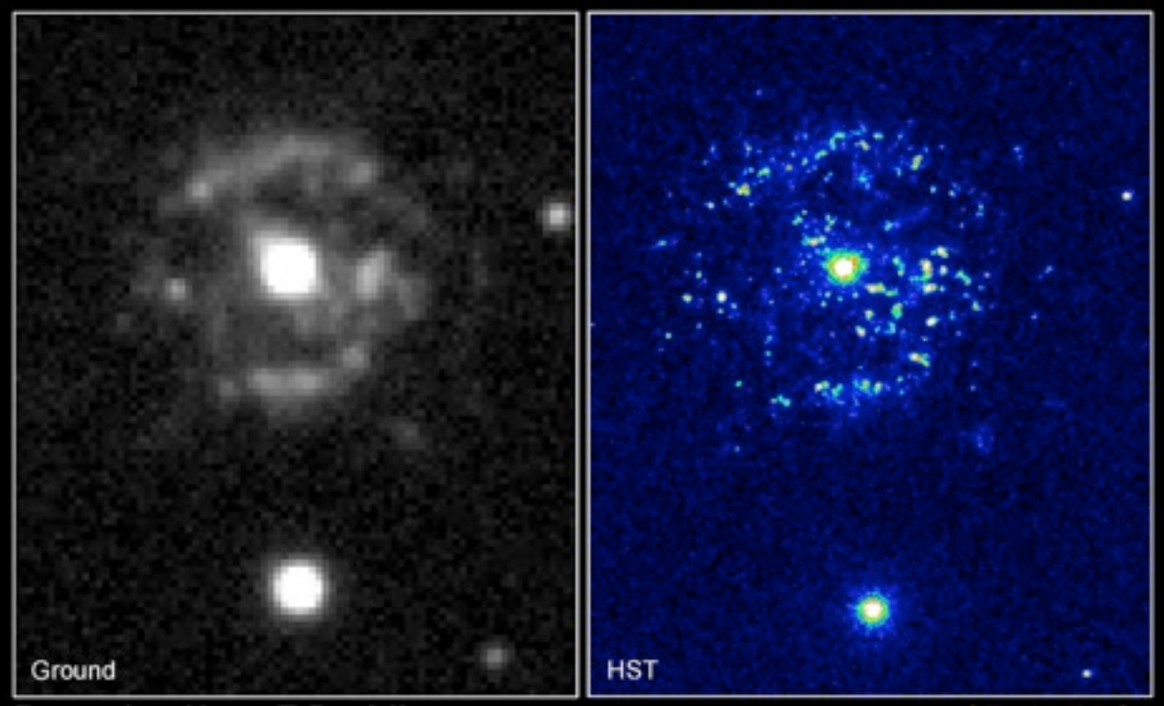
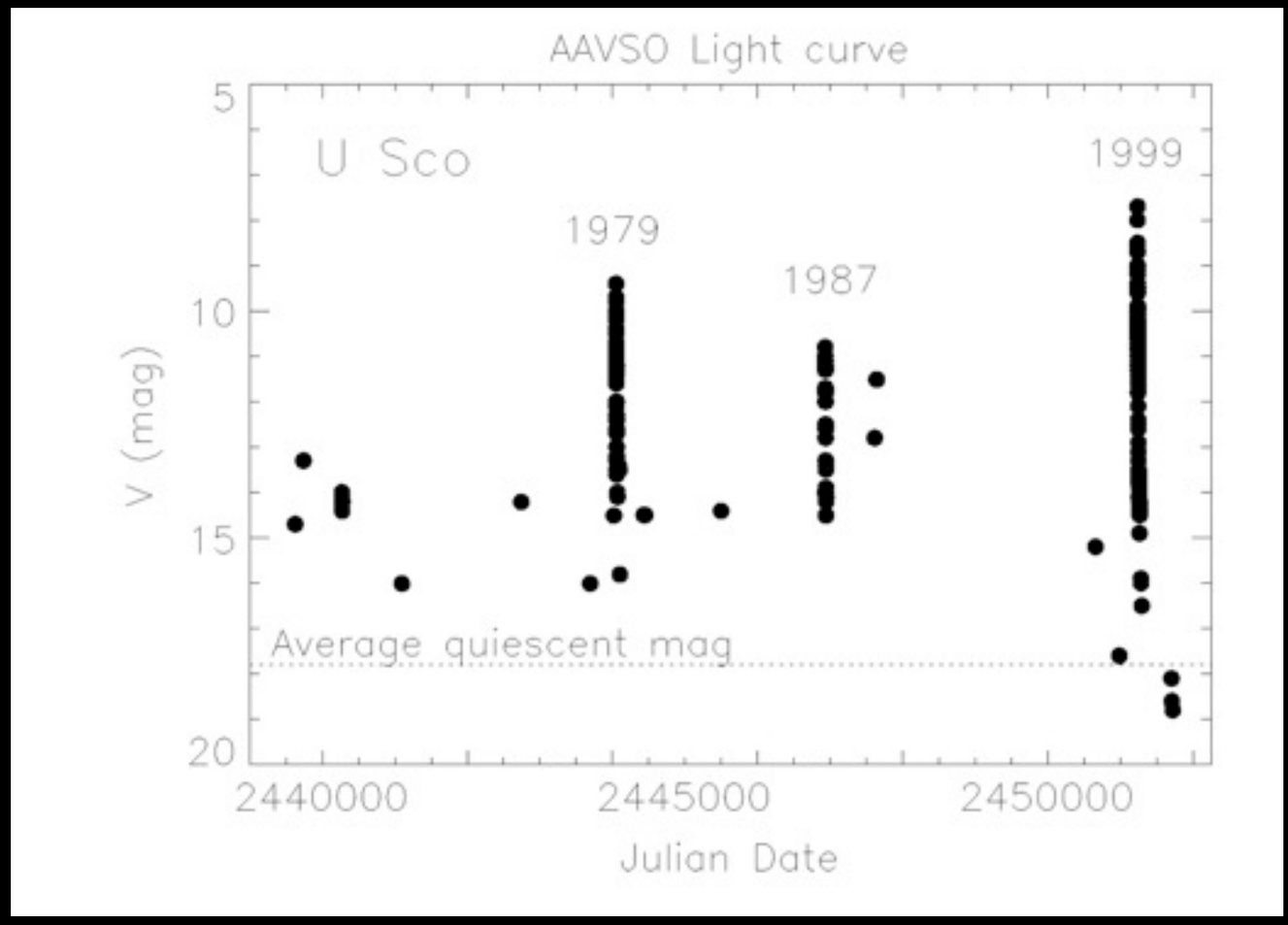


Nova systems erupting every 100 yrs or less.



The white dwarfs are near the Chandrasekhar mass.

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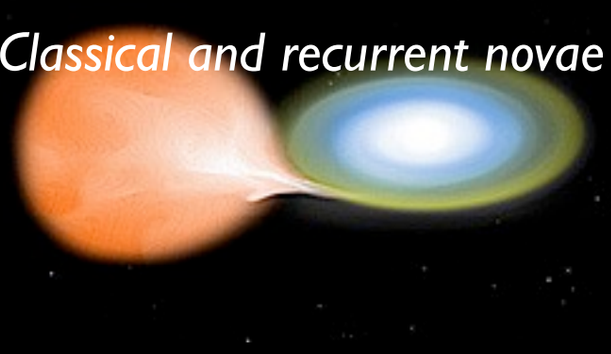

"neon novae"

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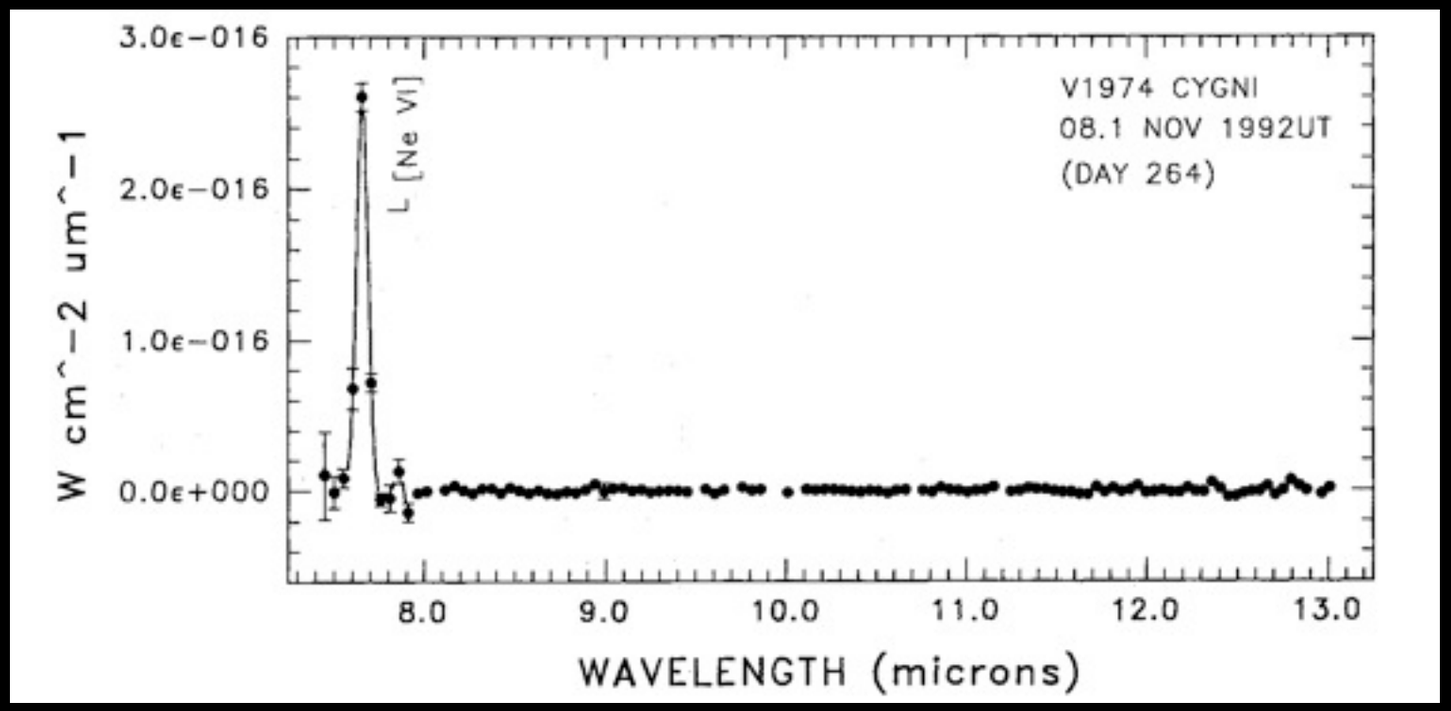
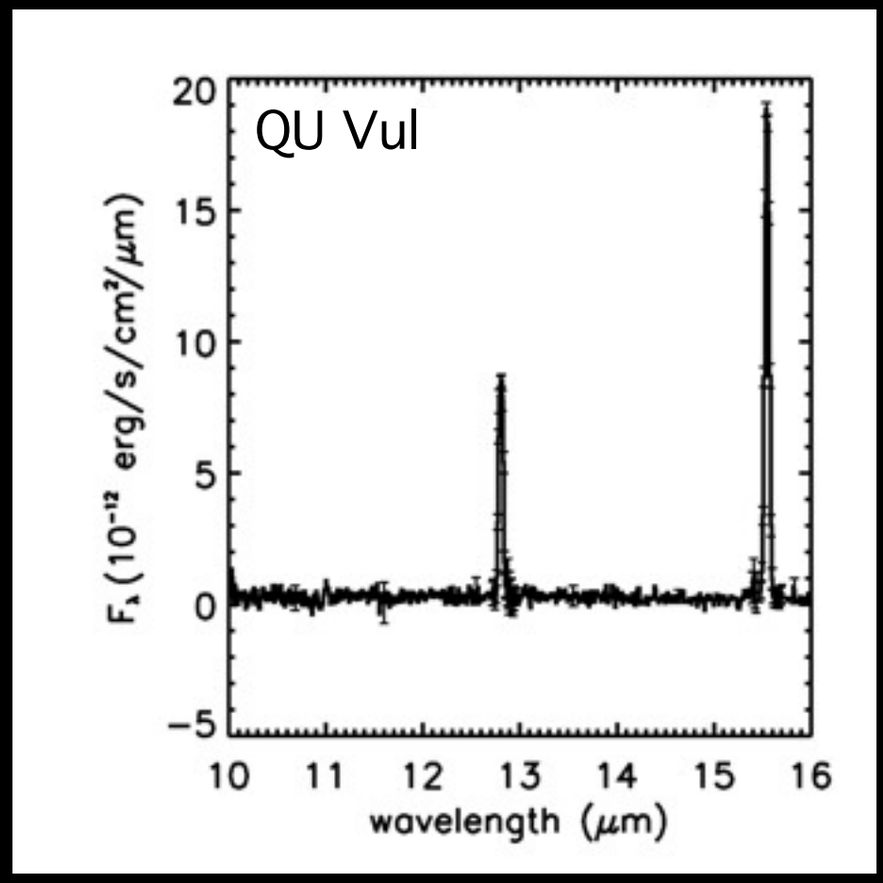
Characterised by strong neon lines in the infrared.



Gehrz et al. 1994, ApJ, 421, 762

Gehrz et al. 2008, ApJ, 672, 1167



Neon abundance in QU Vul is 100-200 times solar.

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dusty novae

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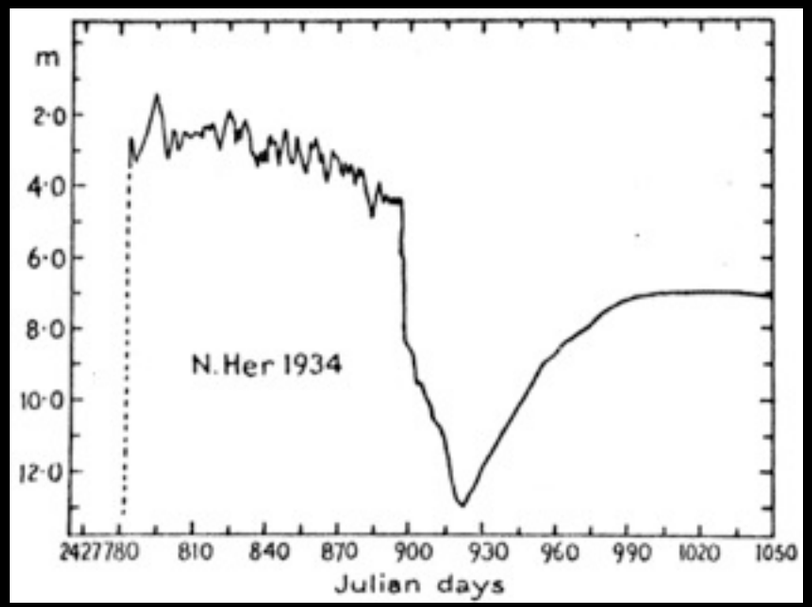
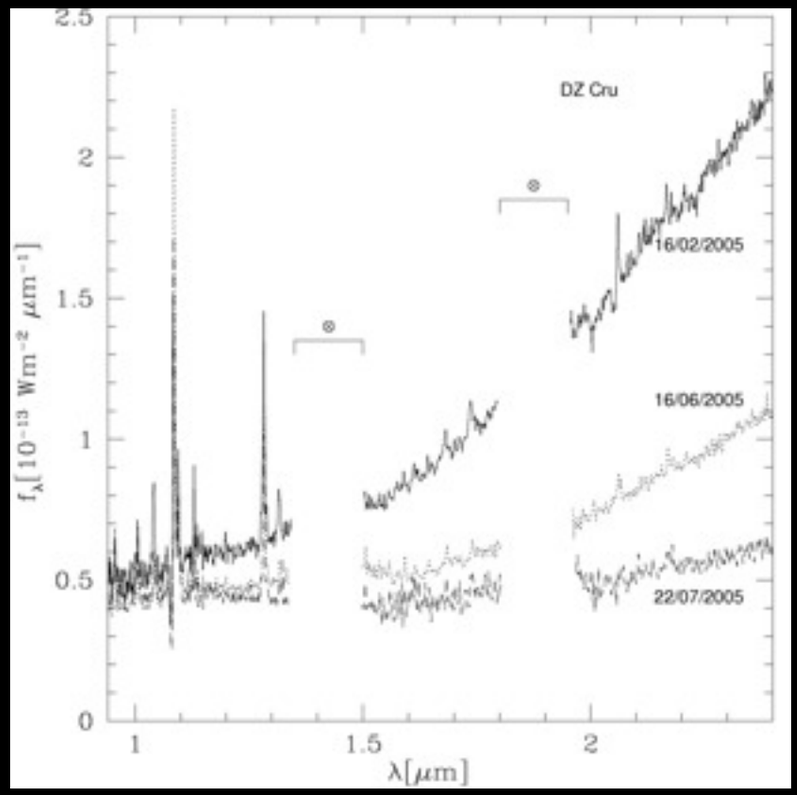
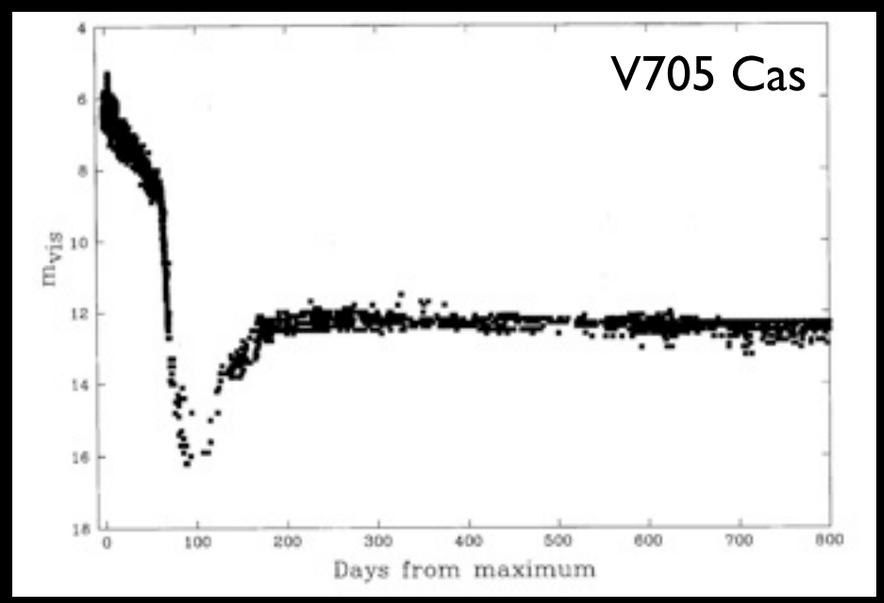


Thermal emission at > 2 micron.

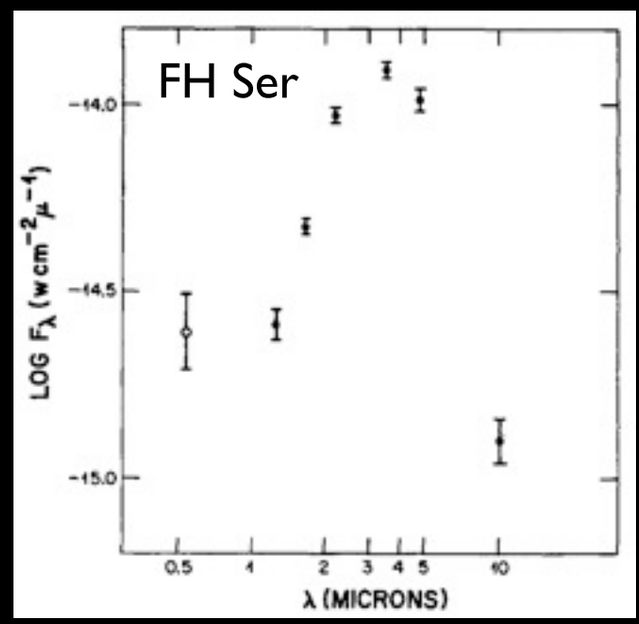


Rushton et al. 2008, MNRAS, 386, 289

Dust dips in the light curves.



Evans et al. 1997, MNRAS, 292, 192



Hyland & Neugebauer 1970, ApJ, 160, L117

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Novae in the infrared

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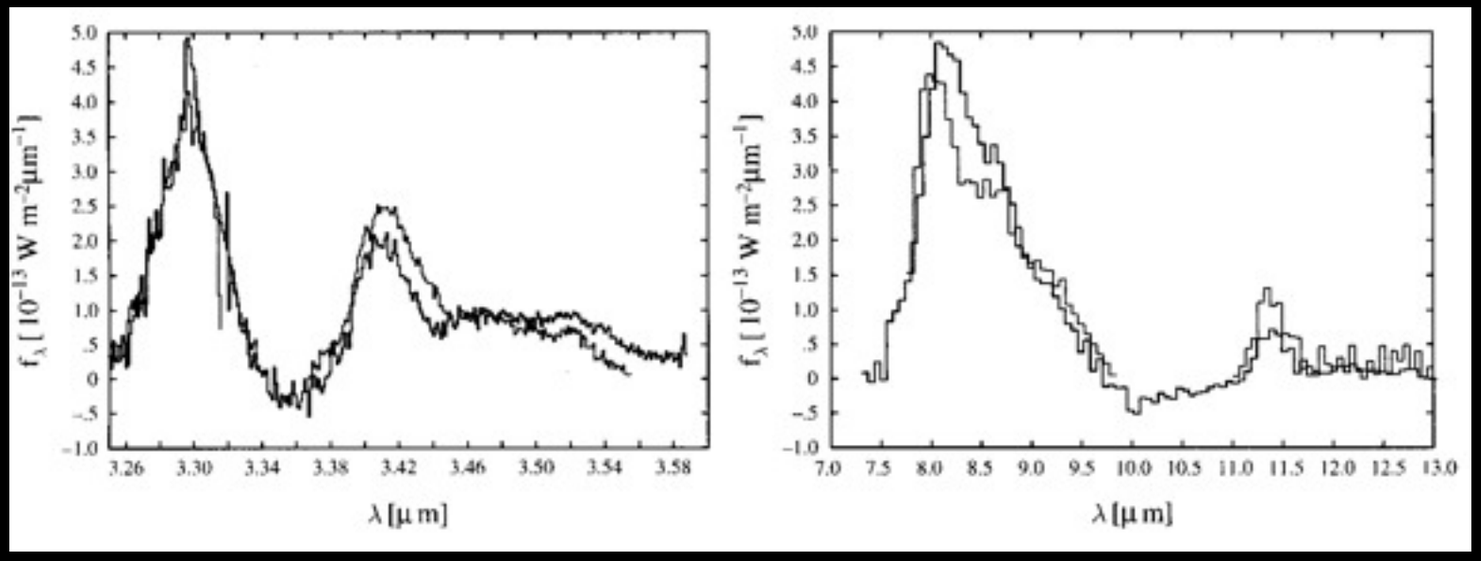
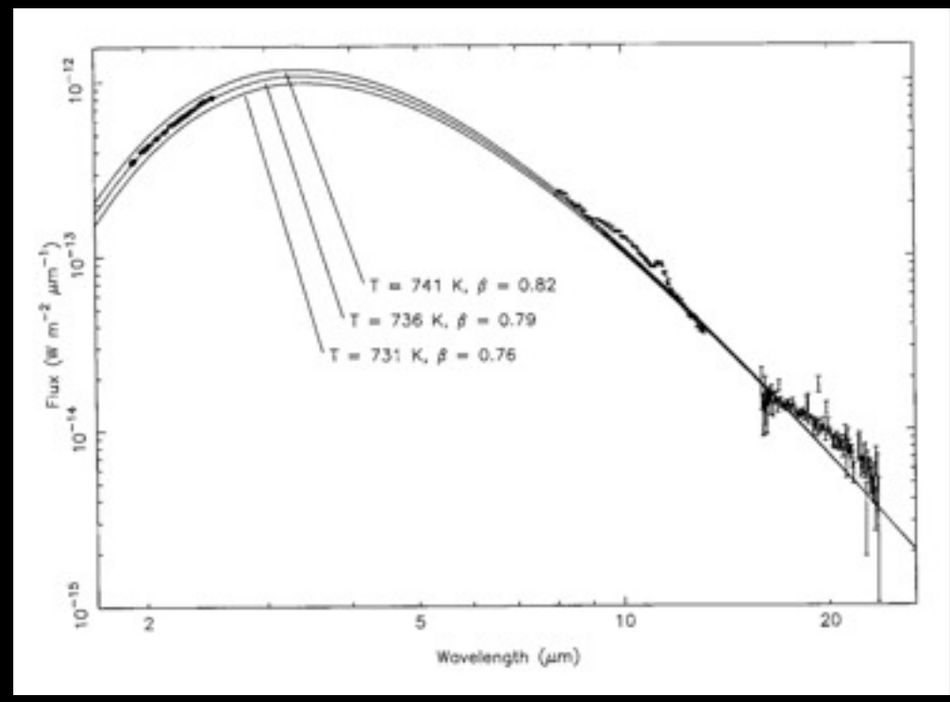


Evans et al. 1997, MNRAS, 292, 192

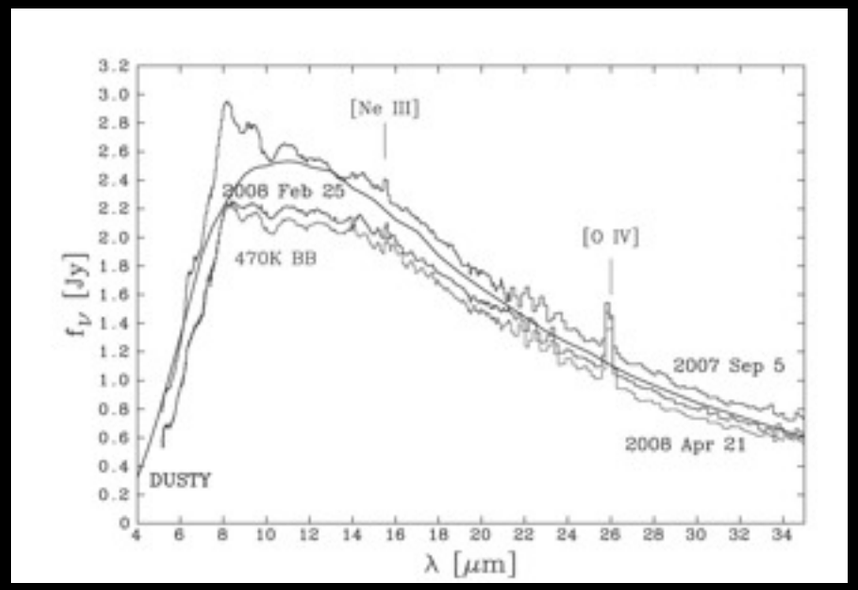
UIR emission in V705 Cas.



V705 Cas dust emissivity.

Evans et al. 1997, MNRAS, 292, 192

HAC in DZ Cru.



Evans et al. 2010, MNRAS, 406, L85

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SOFIA Basic Science 81-0024

SOFIA observations of recurrent novae

M T Rushton, R. D. Gehrz, A. Evans, C. E. Woodward,S. Starrfield, J. Krautter, S. P. S. Eyres, M. P. Maxwell

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SOFIA Basic Science 81-0024

FORCAST 5-25 micron observations of symbiotic recurrent novae.

Dust emission from the secondary wind, which is shocked by the nova ejecta.

RS Oph, T CrB and V407 Cyg.

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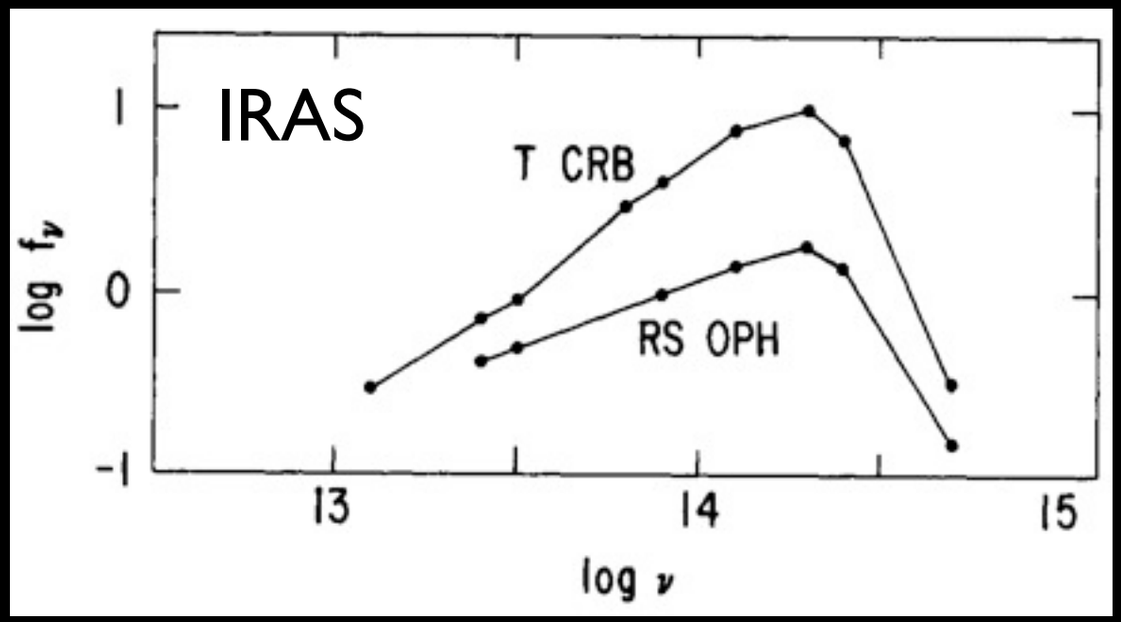
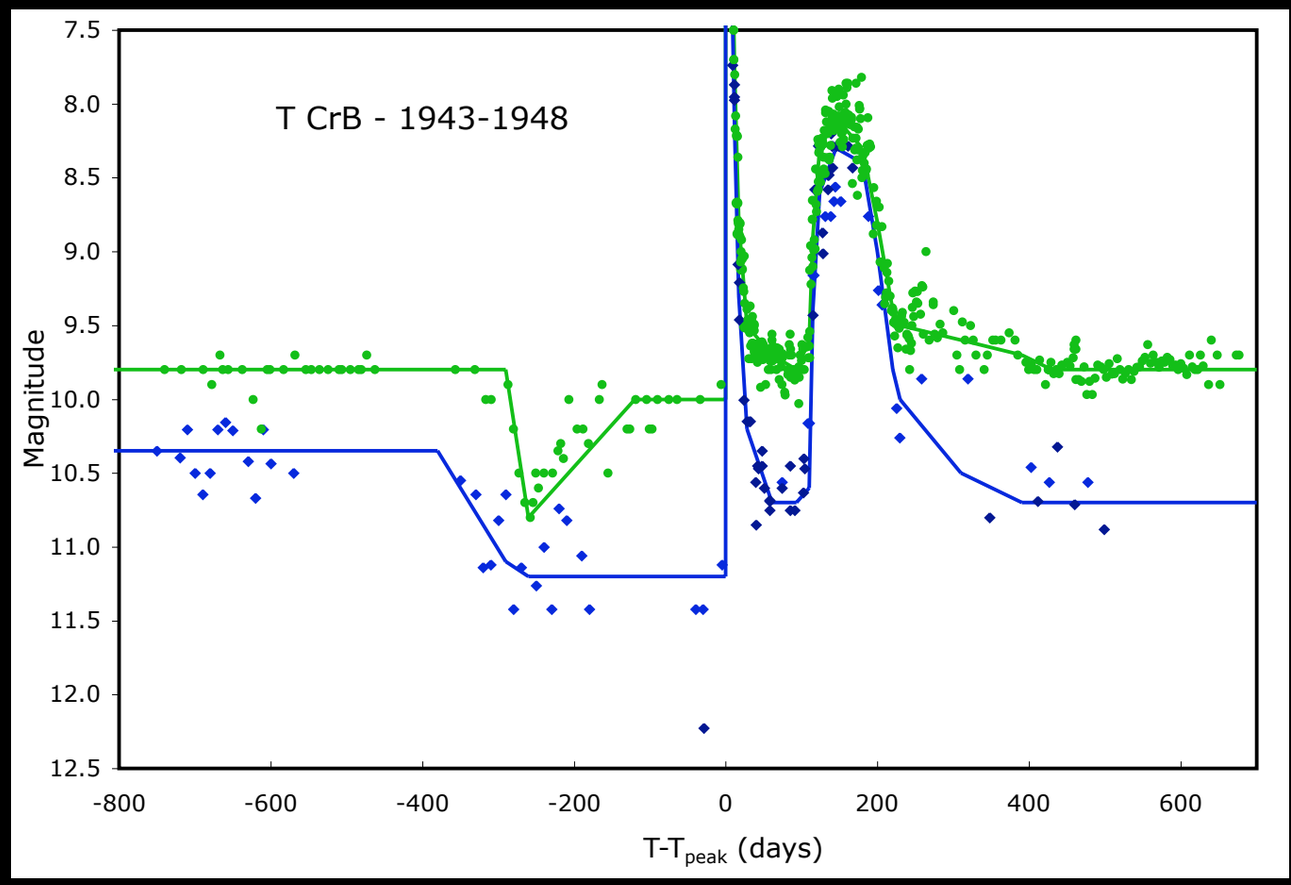
T Coronae Borealis

Outbursts in 1866 and 1946.



Schaefer 1986, PASP, 98, 556



Schaefer 2010, ApJS, 187, 275

Next outburst 2026?

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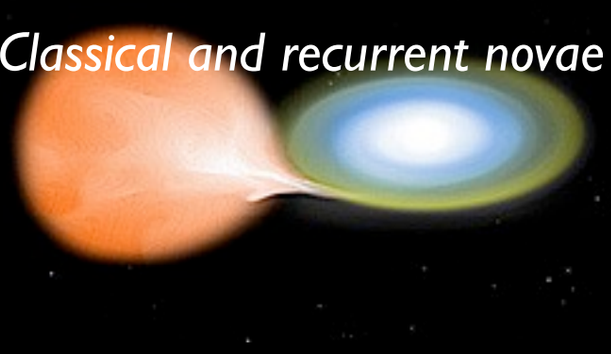
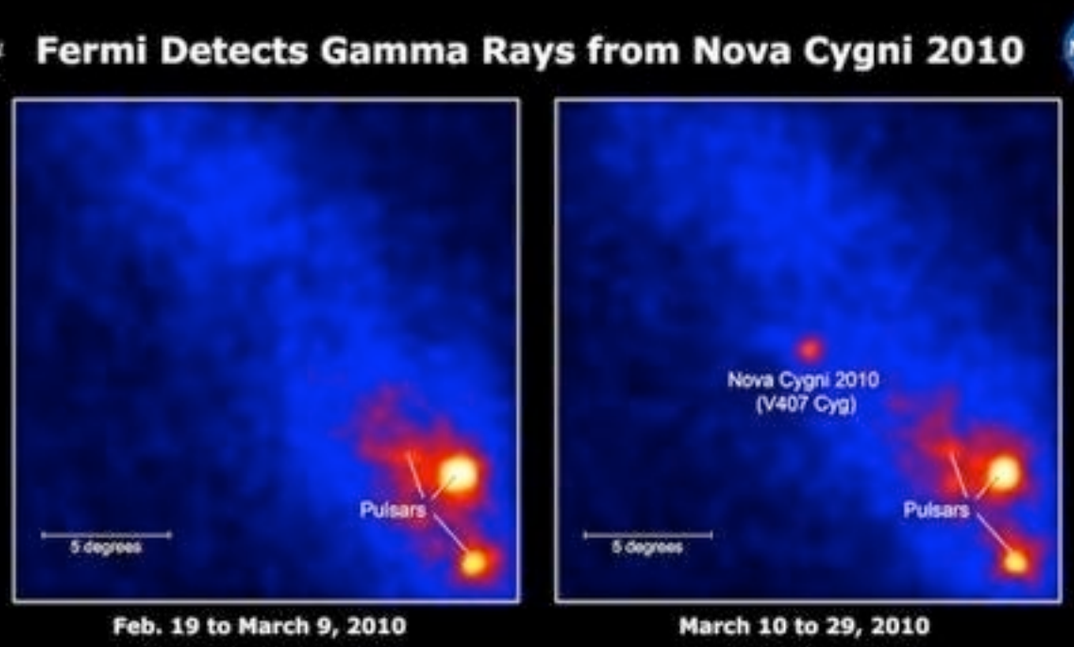


V407 Cygni

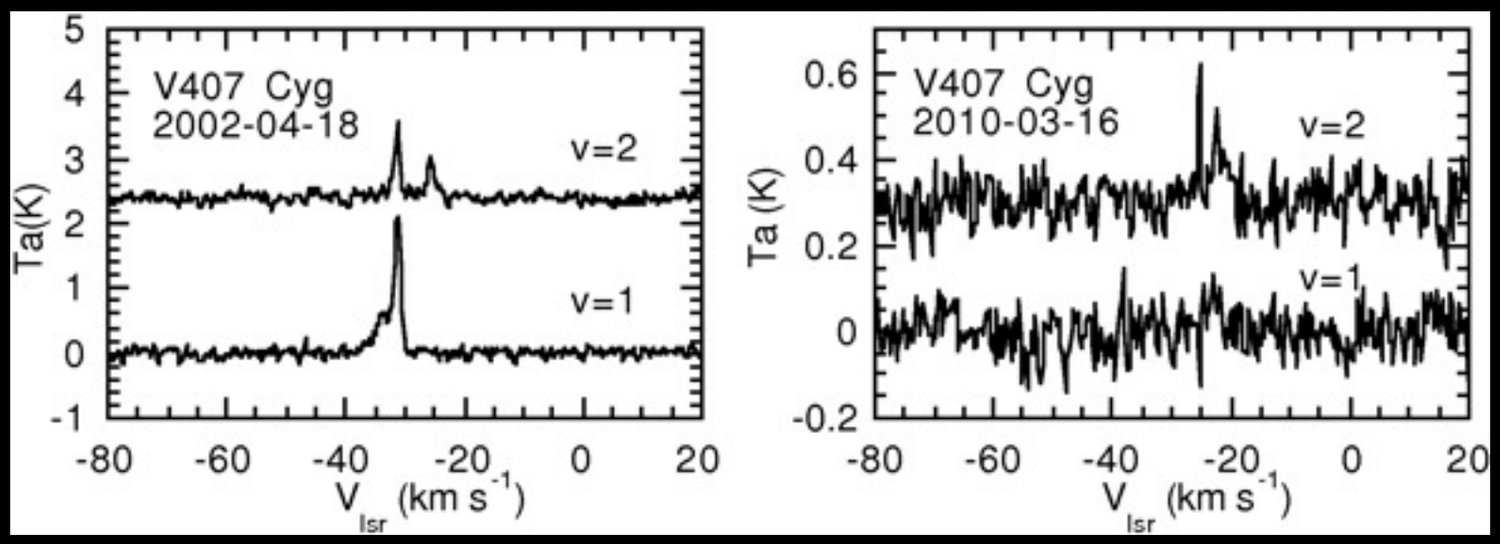


Abdo et al. 2010, Sci, 329, 817

Mira-type secondary star.

D-type symbiotic system.

Shock interaction visible in SiO masers.



Deguchi et al. 2011, PASJ, 63, 309

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Summary of 81-0024

V407 Cyg was observed on flight 0055 at 43K ft;

it was easily detected in all 5-25 micron bands.

T Crb was observed on flight 0056 at 39K ft;

it was fainter than expected at >11.1 micron.

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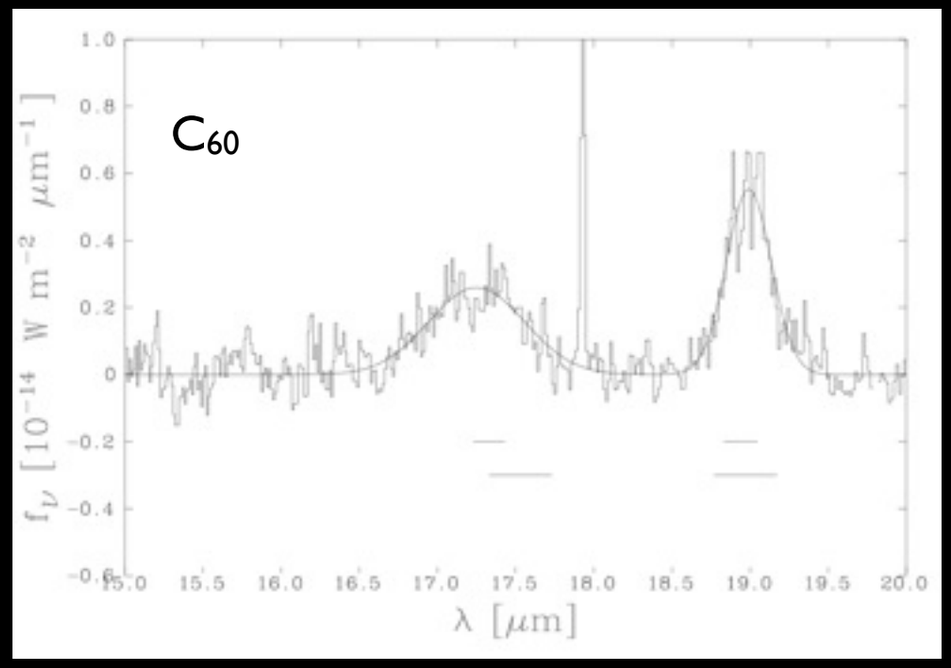
For the Future...

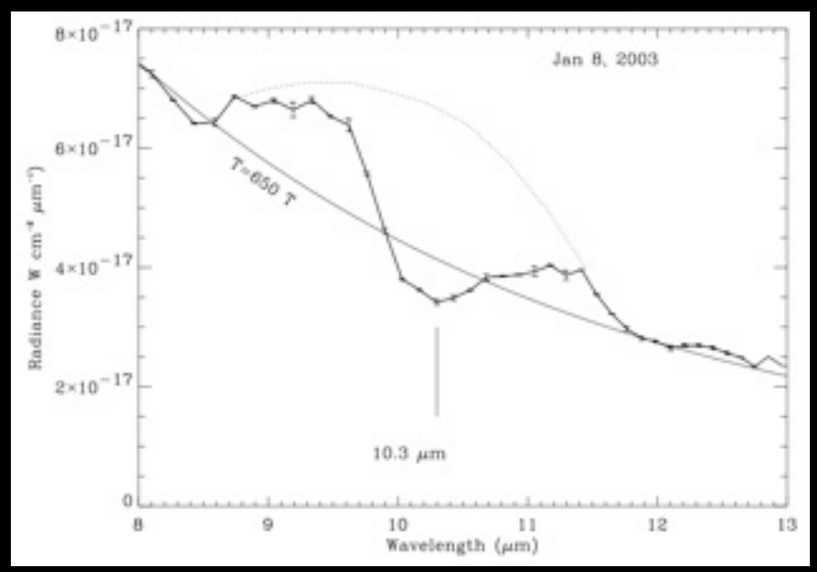


Evans et al. 2011, MNRAS, submitted

The weird symbiotic binary XX Oph

Bond et al. 2003, Nat, 422, 405

Luminous red novae



Lynch et al. 2004, ApJ, 607, L460

Unknown dust(?) feature in V838 Mon

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