

Observations of quiescent novae

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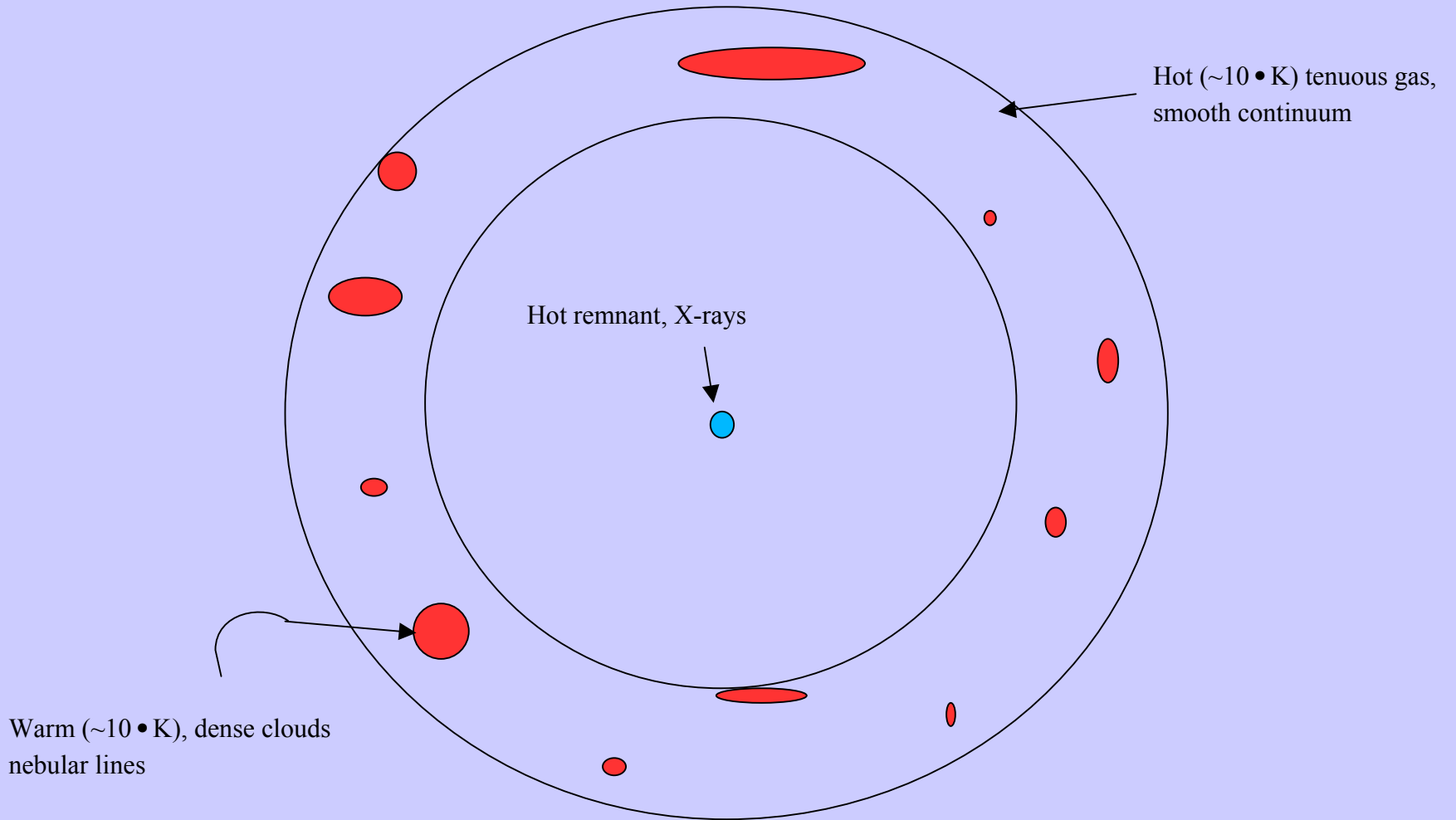
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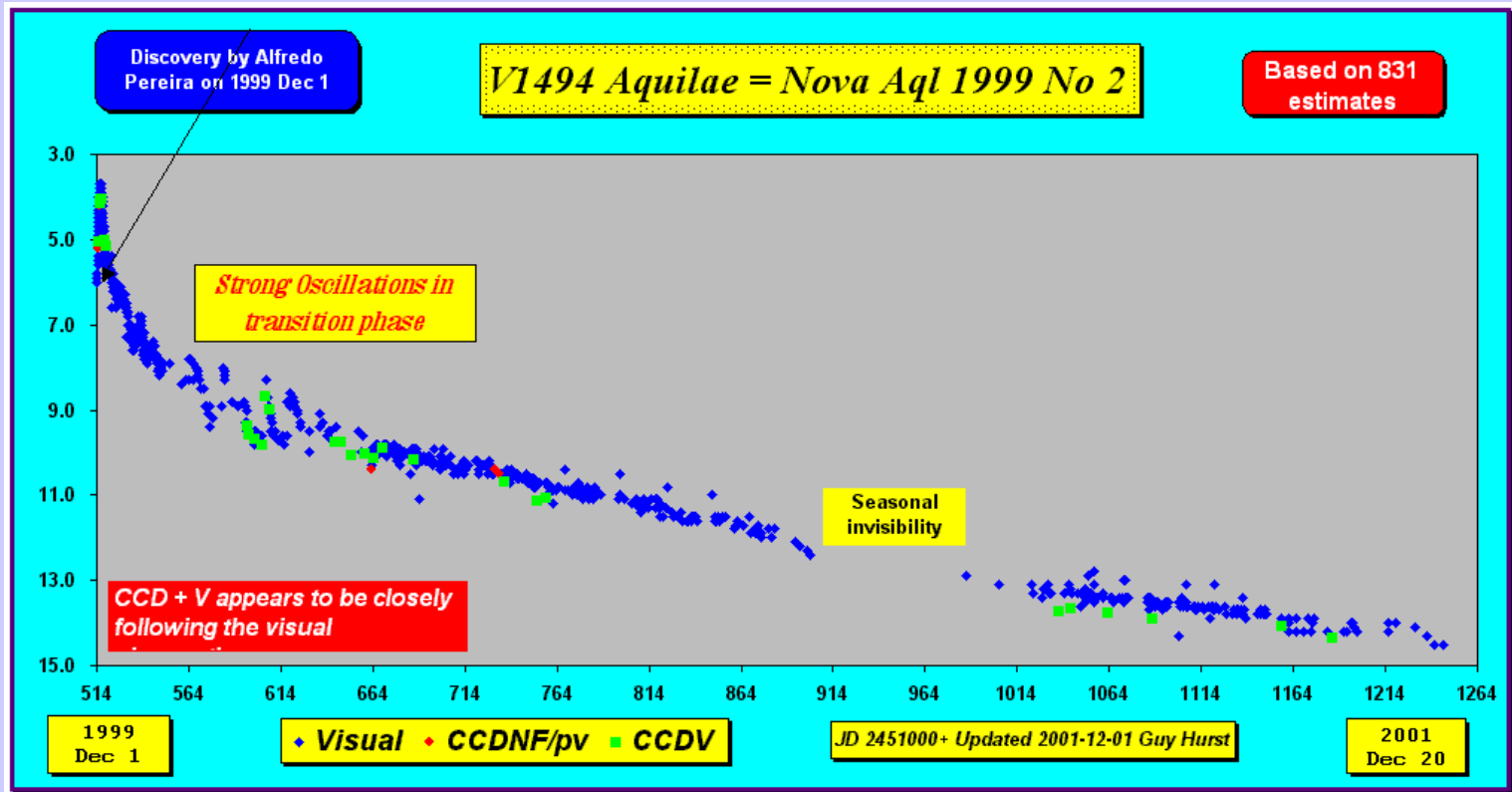
Novae

- WD + MS close binary systems ($P_{\text{orb}} \sim \text{hrs}$)
- Cataclysmic variables at kpc distances.
- Eruption :Thermonuclear runaway of degenerate matter on the surface of the WD. $10^{-6} \cdot M_{\odot}$ ejected @ $\sim 1000 \text{ km/s}$.
- Steady nuclear burning on the WD surface.
- Ejecta pass through several phases : neutral \rightarrow nebular \rightarrow coronal.

Composite model of a nova



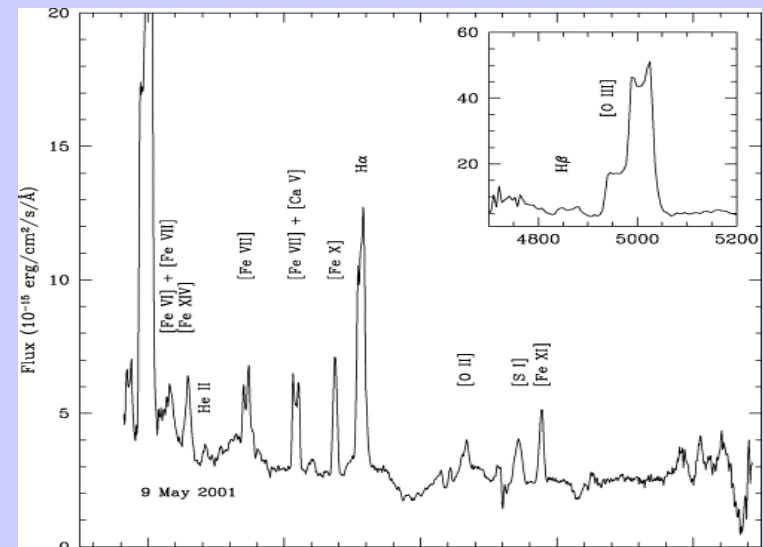
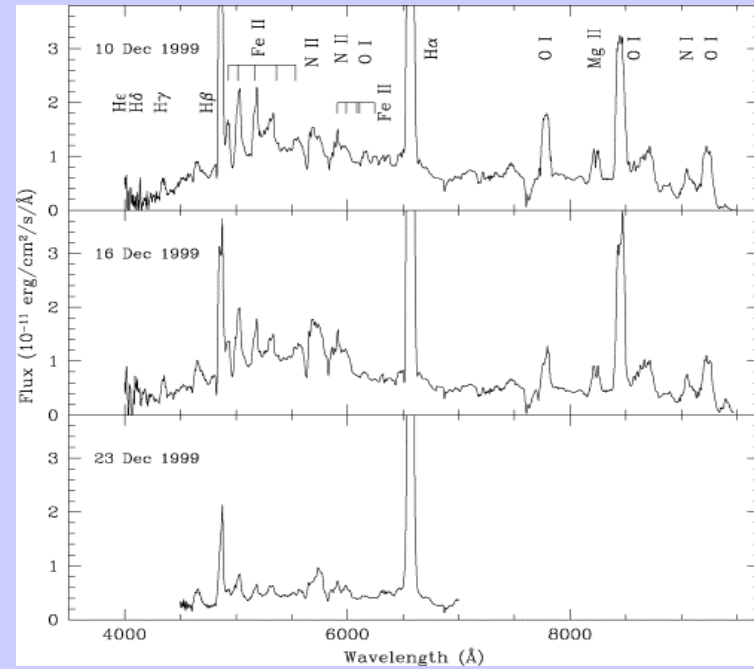
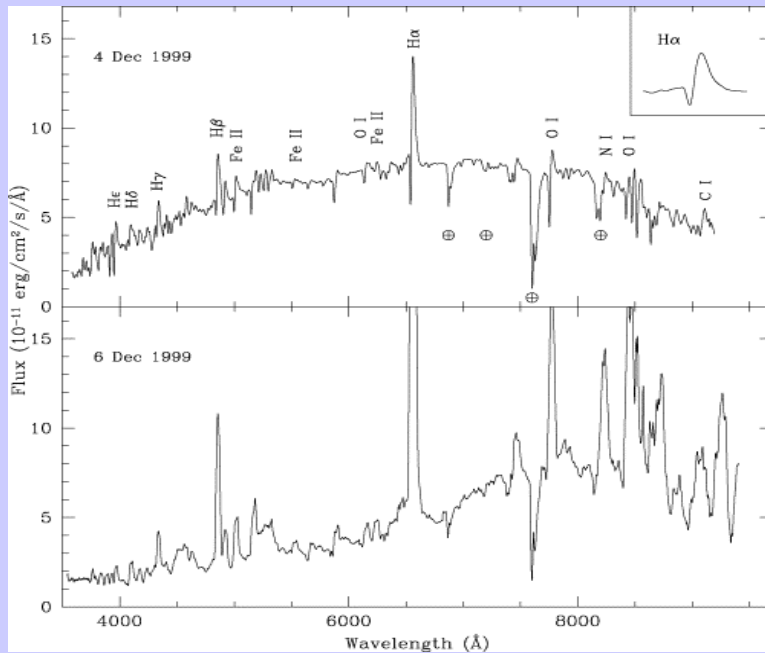
Light curve of a nova



t_3 timescale : few days (v.fast & fast), month (slow), several months (v.slow).

Spectrum changes on a similar timescale.

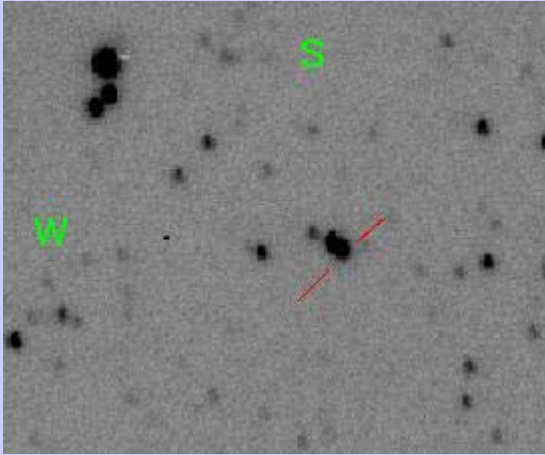
Spectral evolution of V1494 Aql



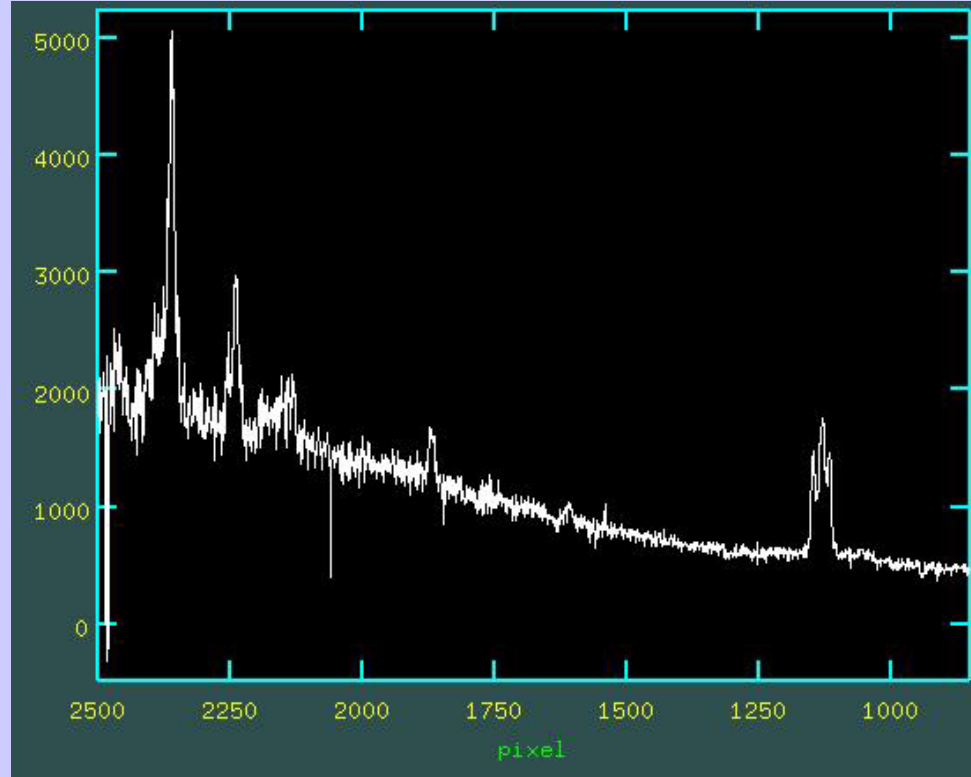
Late stages and quiescence

- The very late stages of a nova outburst are not well-studied.
- Identification of the quiescent nova is often not unambiguous.
- Recover quiescent novae by *UBVRI* imaging.
- Follow-up spectroscopy.
- Implications for theoretical models of nova outburst, interaction among the binary components, hibernation scenario, inter-class relationship among CVs, population studies, etc.
- Long-term programme of monitoring old novae.

V1494 Aql in quiescence



1 July 2006 – clear filter image -- 10s



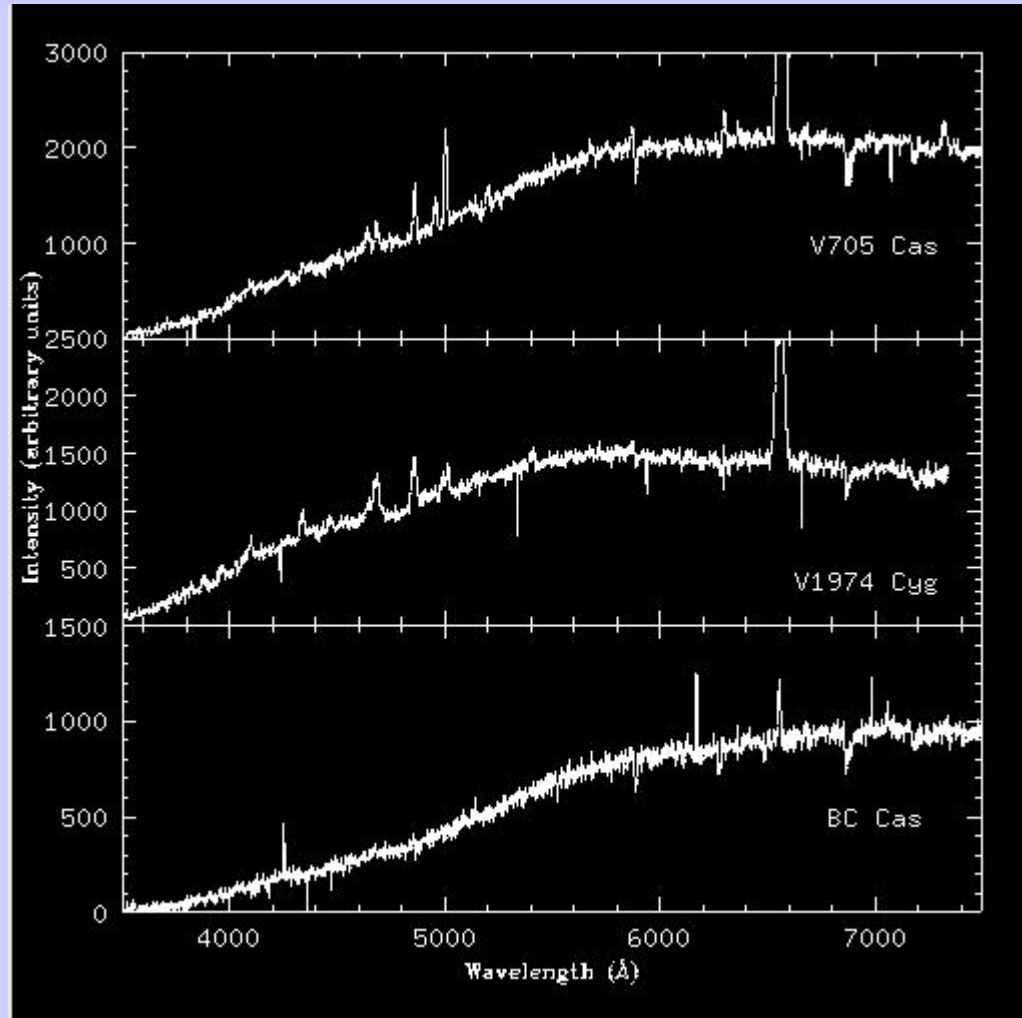
IT = 2400s

Some other objects

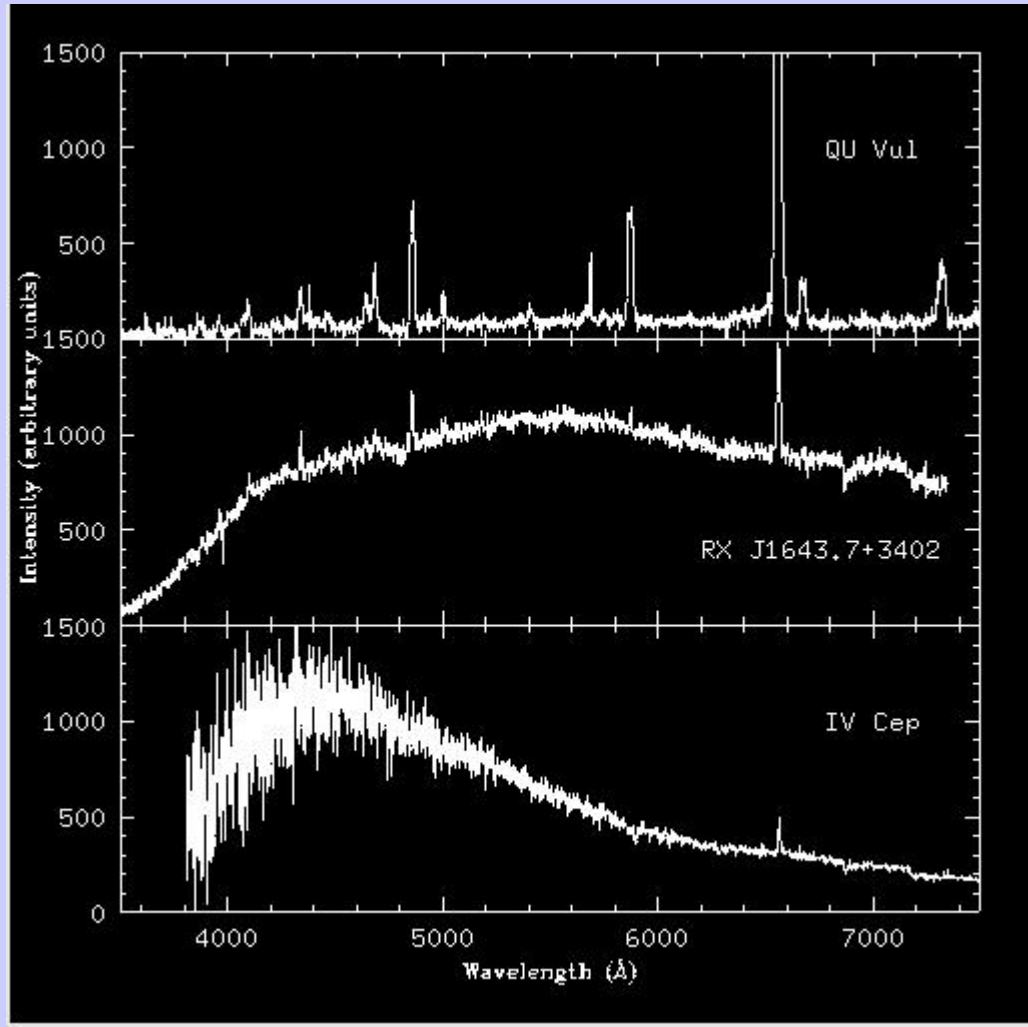
Table 1: Targets of observation

Name	Outburst year	Remarks	Obs date	IT (sec)
QU Vul	1984 #2	fast neon nova	16 Nov 2006	2400
RX J1643.7+3402	-	Novalike	24 Mar 2006	900
IV Cep	1971	fast nova	18 Aug 2006	1800
V705 Cas	1993	fast nova : formed dust	18 Aug 2006	2400
V1974 Cyg	1992	Fast neon nova	16 Nov 2006	2400
BC Cas	1929	Fast nova	16 Nov 2006	2400

Spectra of quiescent novae -- 1



Spectra of quiescent novae -- 2



Remarks

- Spectra of all old novae do not look alike.
- The two neon novae, QU Vul and V1974 Cyg look very different in quiescence.
- Presence of high excitation lines (QU Vul) and a blue continuum (IV Cep) indicate that the white dwarf remains hot for a long time after outburst in some novae.
- V705 Cas, BC Cas and V1974 Cyg seem to contain a dominant late-type secondary.