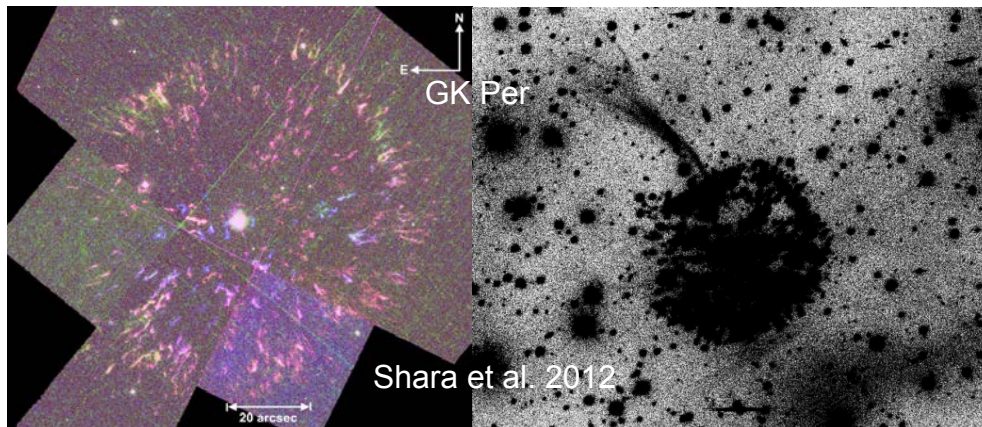


# Novae, Supernovae, Starbursts

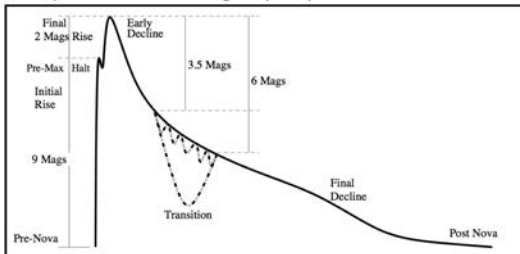
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◆ **Harvey, Jurkic, Magee, Yano**

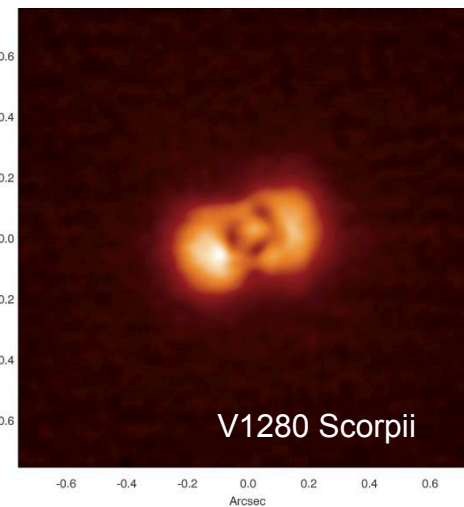
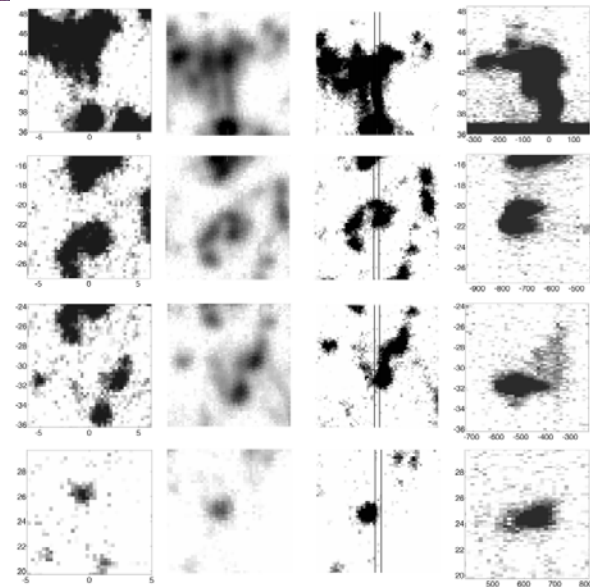
# Cloudy Winter School



Typical V-band ( $\lambda = 0.55\mu\text{m}$ ) nova lightcurve.  
Reproduced from McLaughlin (1960)



1. Fast novae have  $t_3 < 20$  days,
2. Moderate speed novae have  $20 < t_3(\text{days}) < 120$ ,
3. Slow novae have  $t_3 > 120$  days.



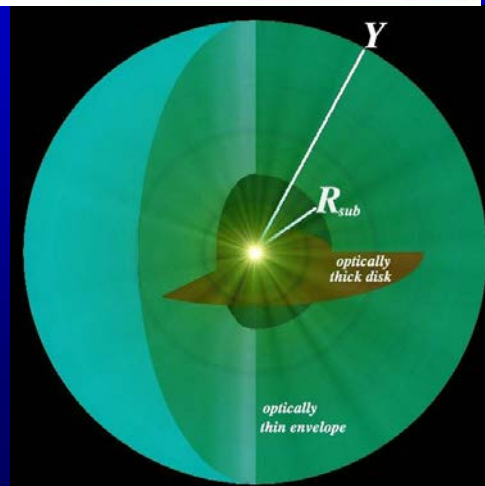
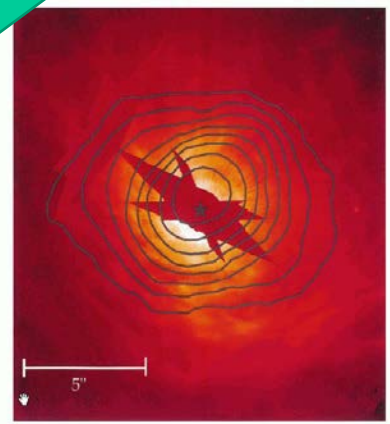
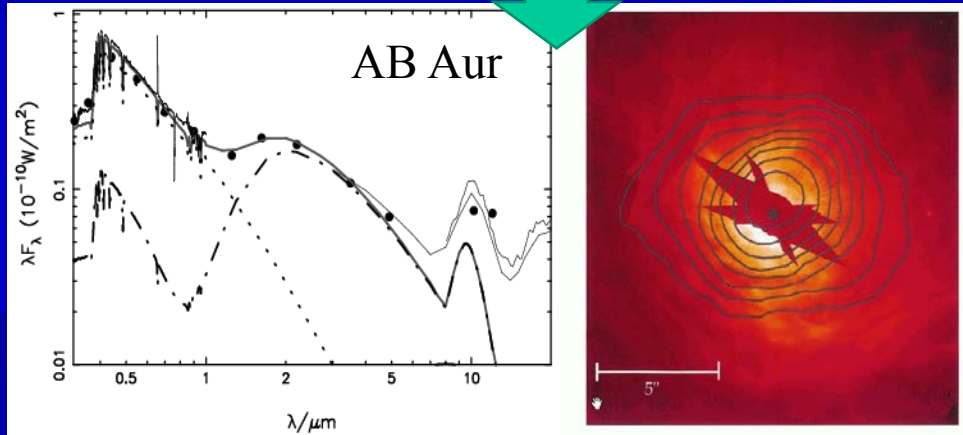
Eamonn Harvey, NUI Galway.  
Supervisor: Dr. Matt Redman

Kindly funded by:  IRISH RESEARCH COUNCIL  
An Chomhairle um Thaighde in Éirinn

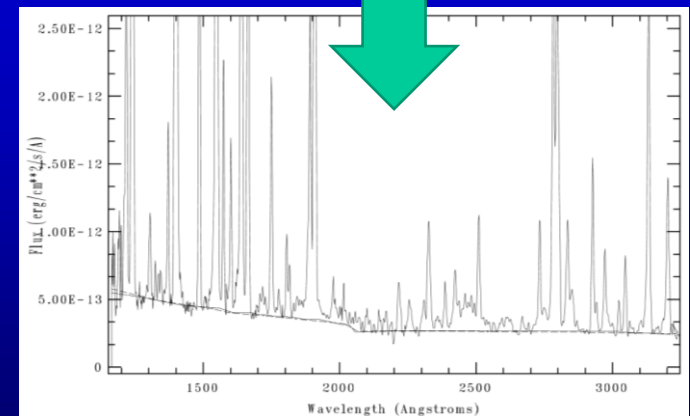
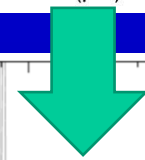
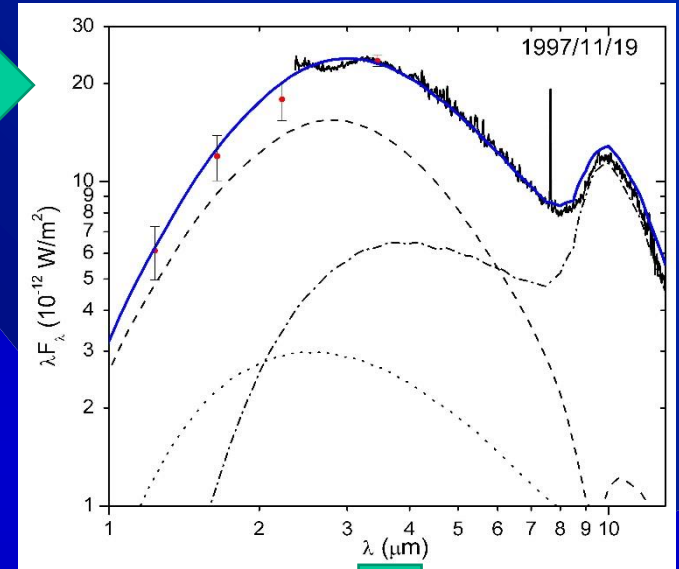
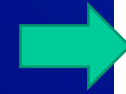
# Tomislav Jurkić, postdoc researcher University of Rijeka, Croatia



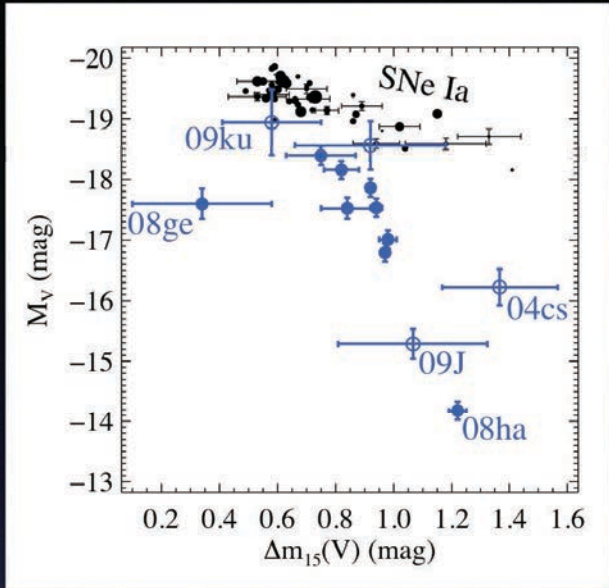
- **Circumstellar properties of:**
  - Mira component in symbiotic stars
  - Young stellar objects



**DUSTY** ⇒  
radiative transfer  
through dust



gas properties?

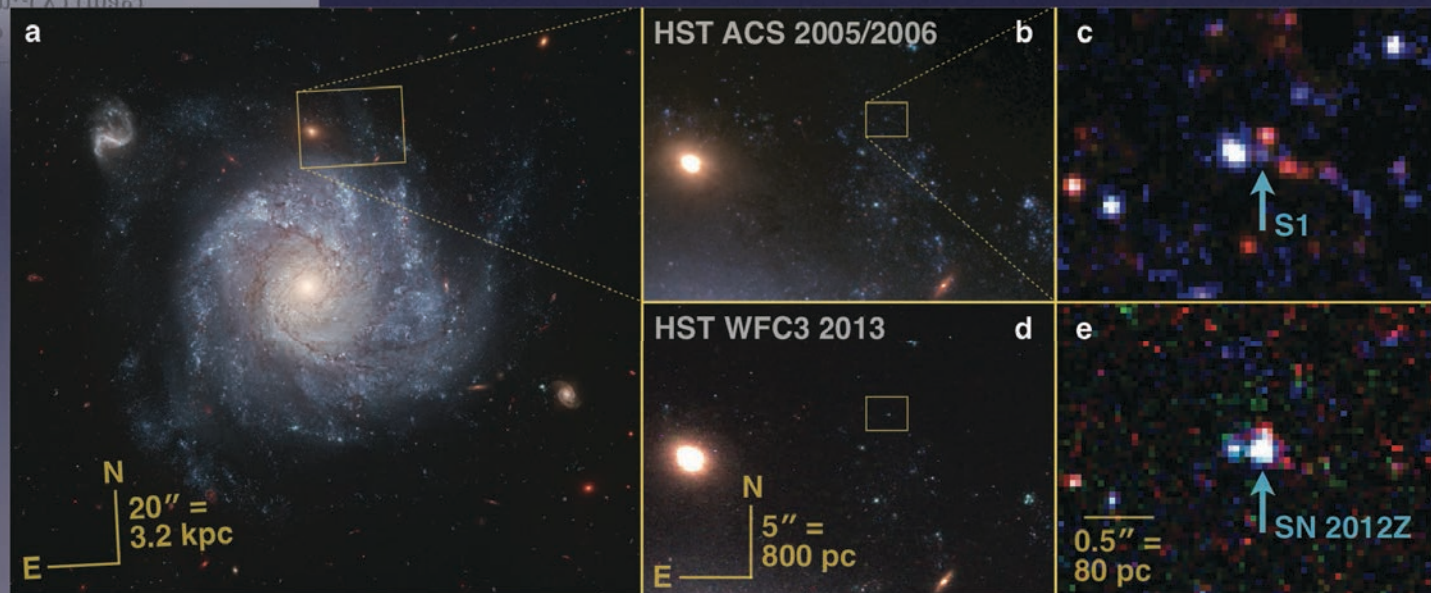


# Mark Magee

## Queen's University Belfast

- Recently started PhD as part of the SN group here at QUB
- Studying Type Ia SNe and their host environments

C. McCully et al. 2014



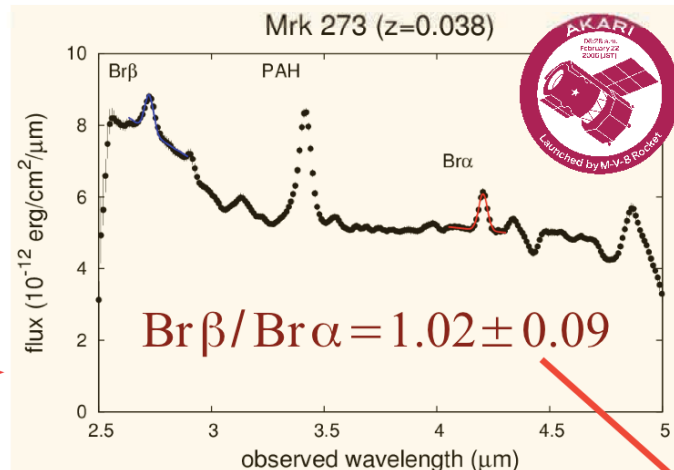
# HI Recombination Line Ratio Anomaly in Ultraluminous Infrared Galaxies

- ULIRGs ( $L_{IR} > 10^{12} L_{\odot}$ )
  - Radiating quasar-like luminosity as infrared dust emission
  - Energy source is hidden behind dust (Starburst and/or AGN?)

Unique!!

To avoid dust extinction

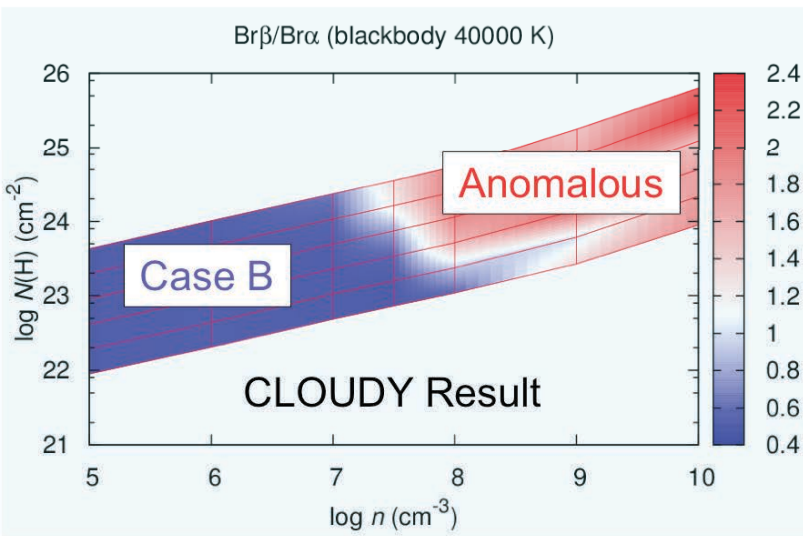
AKARI 2.5-5.0  $\mu\text{m}$  infrared spectroscopy



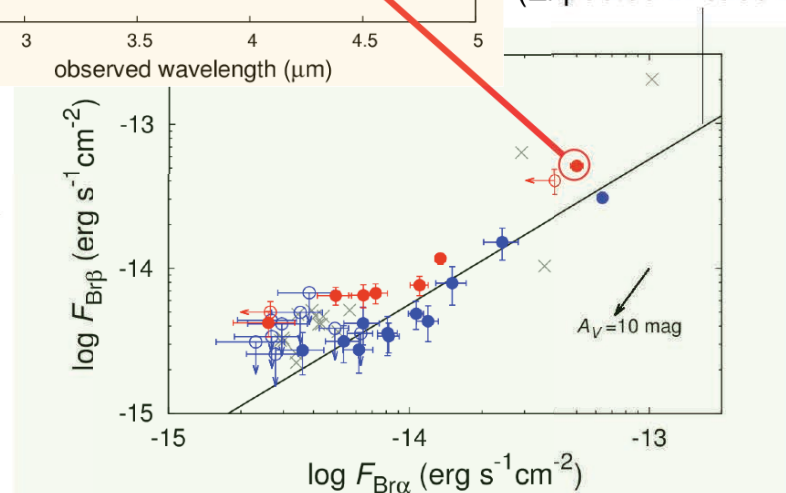
$\text{Br } \alpha$  ( $n: 5 \rightarrow 4$ )  
@4.05  $\mu\text{m}$

$\text{Br } \beta$  ( $n: 6 \rightarrow 4$ )  
@2.63  $\mu\text{m}$

$\text{Br } \beta / \text{Br } \alpha = 0.56$   
(Expected in case B)



reproduced by CLOUDY in very high density conditions



Anomalous  $\text{Br } \beta / \text{Br } \alpha$  line ratio ( $\sim 1.0$ ) is found in some ULIRGs

- $\text{Br } \beta$  is enhanced more than  $\text{Br } \alpha$
- Oposite to the effect of dust extinction

What is the cause?

Are there any other parameters?