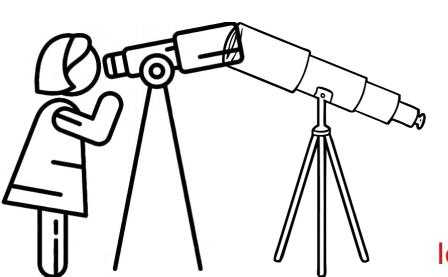
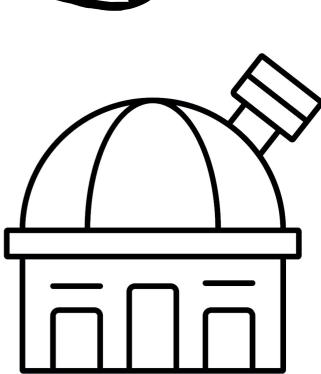
#### The role of small telescopes in the follow-up of Gaia Alerts



Elmé Breedt IoA, Cambridge, UK



#### Gaia

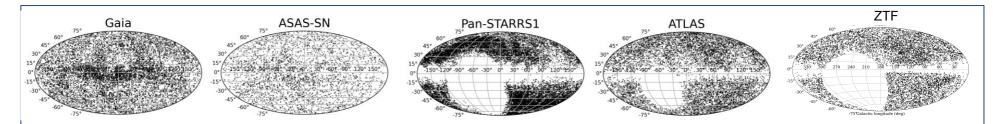
- ★ 3 data releases so far
- ★ Creating a revolution in astronomy
- ★ Data used from the solar system to galactic archeology to cosmology
  - Large and small telescopes can contribute

### Gaia Alerts

http://gsaweb.ast.cam.ac.uk/alerts/alertsindex

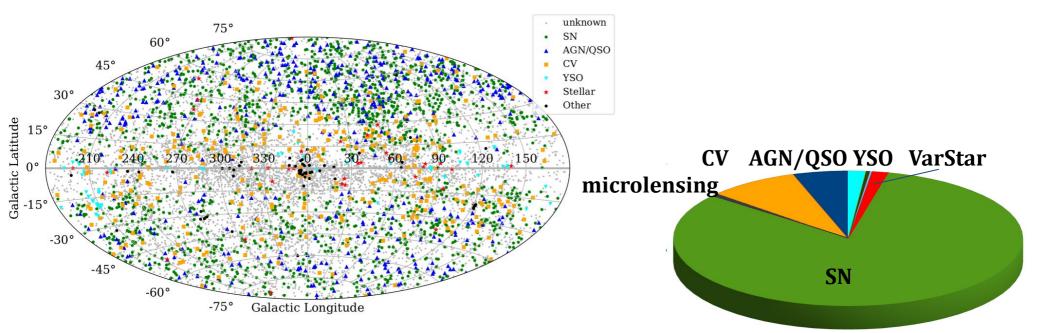
- ★ Gaia's transient survey
- ★ Variety of other photometric surveys with similar goals
- $\star$  Each with its own strengths and features
- ★ Gaia Alerts is a catalogue-driven survey (No images to inspect)





#### **Gaia Alerts**

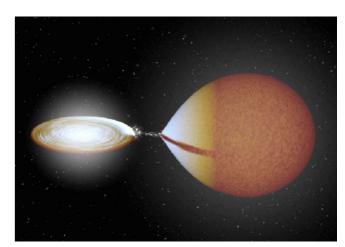
2025-07-03: 23 045 alerts, of which 27.6% are classified (6364)

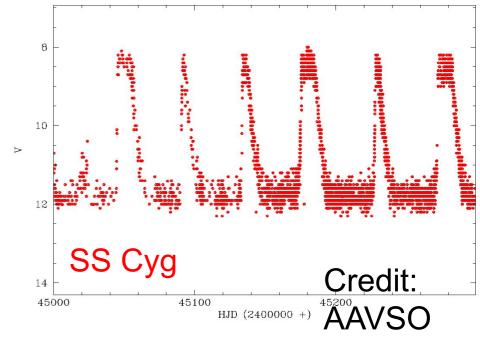


Follow-up mostly by Supernova surveys (PESSTO, NUTS, Asiago Surveys)

## **Cataclysmic Variables**

- + White dwarf
- + Low mass star
- + Accretion disc



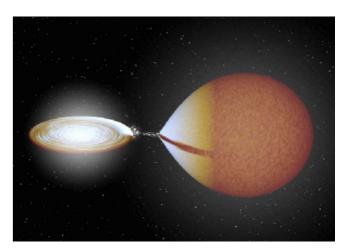


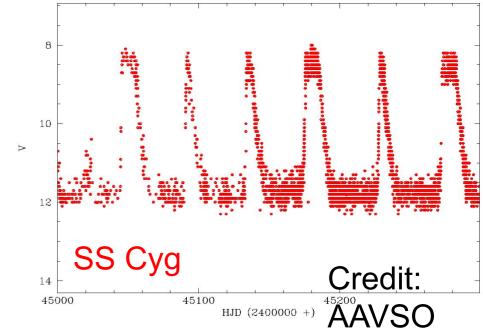
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SS Cyg (27 Sep 1896-30 July 2006)

#### riables

- + White dwarf
- + Low mass star
- + Accretion disc





#### **Cataclysmic Variables** 13 Pss=0.0816(2) d 13.5 14 orbital humps . . . . . . 531.7 531.8 532.7 532.8 530.3 530.4 530.5 531.6 532.5 532.6 532.3532.4 13 13.5 14 orbital humps P\_=0.07824(2) d aprijužem 13.5 535.6 533.3 533.4 533.5 533.6 534.3 534.4 534.5 535.4 535.5 Orb 401.37 14 14.5 alsons lassilas 536.6 536.7 538.5 538.6 538.7 538.8 536.5 536.8 16 16.5 17 Photos Provent 542.4 543.6 543.7 543.8 543.4 543.5 JD - 2454 000



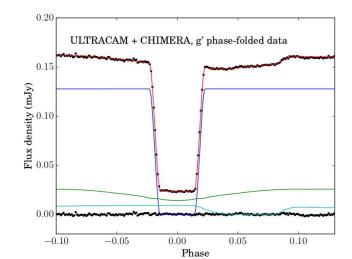
#### Gaia14aae

A 'pure' Helium binary!

The first in which the white dwarf is fully eclipsed

- Ideal for parameter studies

Longest P<sub>orb</sub> with outbursts - 49.7 min



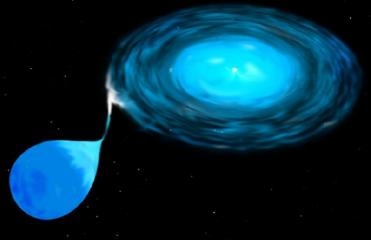
$$P_{orb} = 49.708061 \pm 0.000023 \text{ min}$$

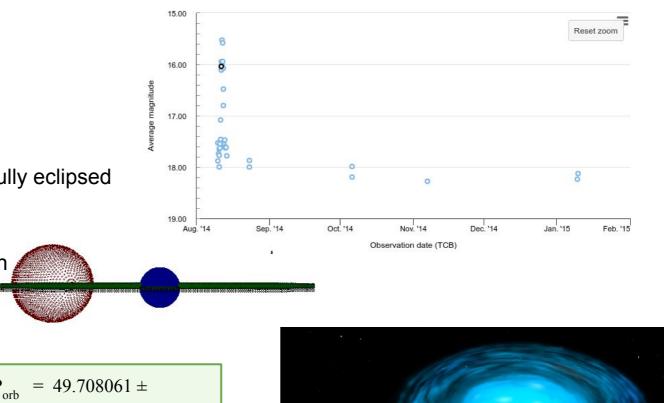
$$T_{WD} = 12900 \text{ K}$$

$$q = 0.0296 \pm 0.0007$$

$$M_1 = 0.89 \pm 0.04 M_{\cancel{}}$$

$$M_2 = 0.0263 \pm 0.0014 M_{\cancel{}}$$

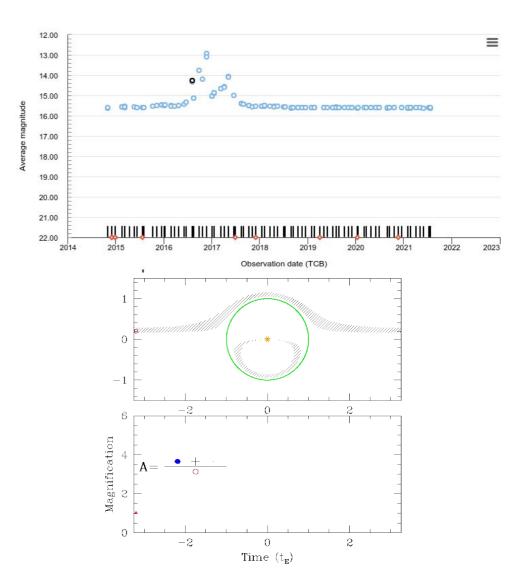




### Gaia16aye



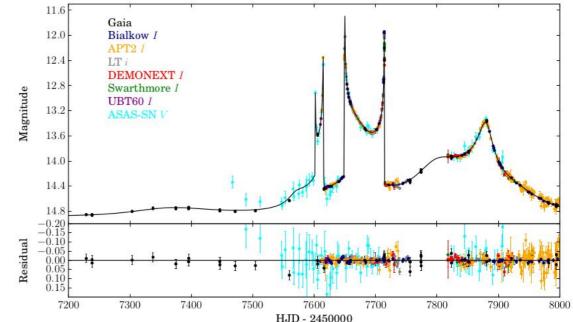


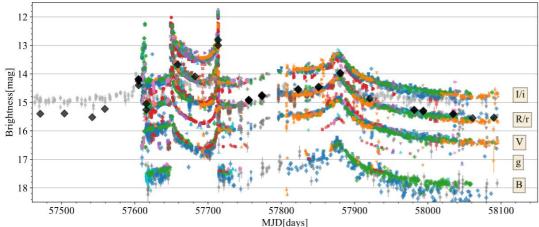


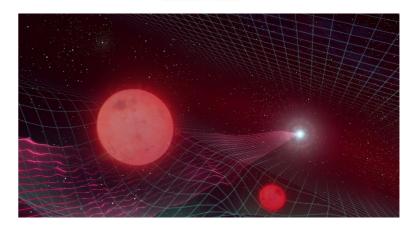
### Gaia16aye

25000 datapoints from62 telescopes over500 days

Lens is a binary at 780 pc, with  $M_1$ =0.57±0.05 M $^{\odot}$  and  $M_2$ =0.36±0.03 M $^{\odot}$ 



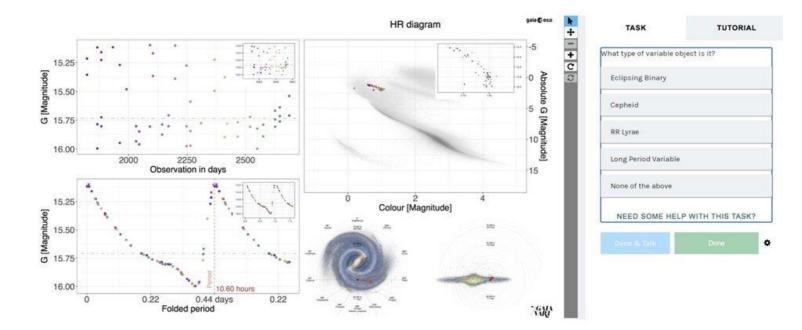




# Gaia Vari

http://gaiavari.space

#### A Zooniverse project to help classify variable stars





### Small telescope contribution

- $\star$  Target characterisation
- ★ Additional information e.g. periods
- ★ Fast response
- ★ Long term monitoring
- ★ Share the thrill of observing!



#### Clear skies!