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Faculty of Physics

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Gaia Alerts optical follow-up from Lisnyky observatory

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$50^{\circ}17'53''\text{N}$

$30^{\circ}31'27''\text{E}$

156 m asl

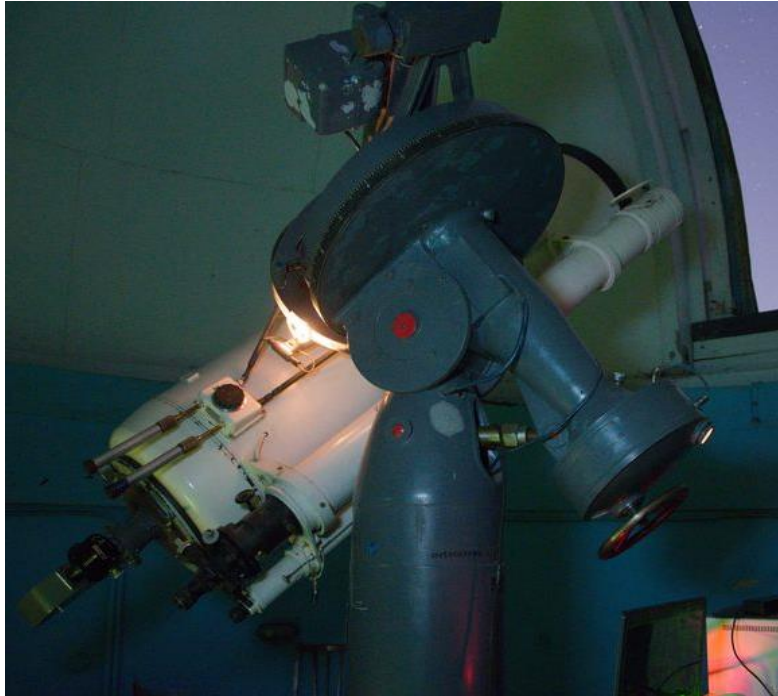
(IAU code 585)



Lisnyky observatory



Telescopes & Instrumentation



0.48-m telescope AZT-14A

Low-resolution prism

Spectrograph ASP-9

& fullframe CCD

Starlight Xpress SXVR-H35

0.7-m telescope AZT-8

Filter wheel with UBVRI

filters & CCD FLI PL47-10



Scientific activities

- ❑ Observations of comets and minor planets.
- ❑ **Follow-up observations of Gaia transients and asteroids.**
- ❑ Monitoring of OJ 287 and some AGNs.
- ❑ Low-resolution spectroscopy of bright comets.
- ❑ Follow-up photometry of CVs.

Observations of Gaia transients

Gaia14acf
Gaia16aia
Gaia16aik
Gaia16azk
Gaia16bac
Gaia16bnz
Gaia16bwr
Gaia16bww
Gaia17ddi
Gaia17cuh
Gaia18aak
Gaia18aes
Gaia18aip
Gaia18akt
Gaia18arn
Gaia18ajz

Gaia18cjk
Gaia18beg
Gaia18aue
Gaia18awg
Gaia18dvn
Gaia18cgv
Gaia18bfe
Gaia18bvy
Gaia18awg
Gaia19dke
Gaia19emv
Gaia19bsy
Gaia19bcv
Gaia19ava
Gaia19coh

Gaia19dwh
Gaia19cmv
Gaia19bhv
Gaia19bpg
Gaia19btn
Gaia19btz
Gaia19arq

Microlensing events

This year we began to observe candidates for microlensing events at the Lisnyky Observatory

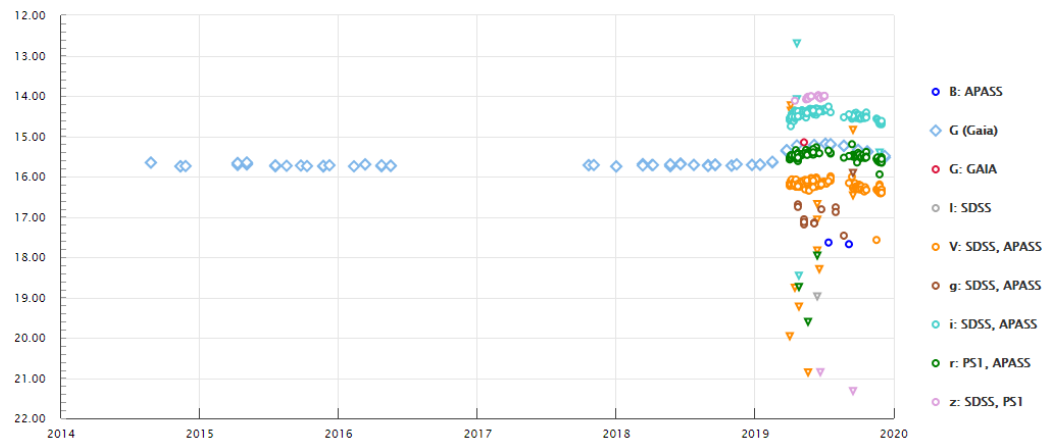
Gaia19dke

(~0.3 mag increase)



Gaia19bcv

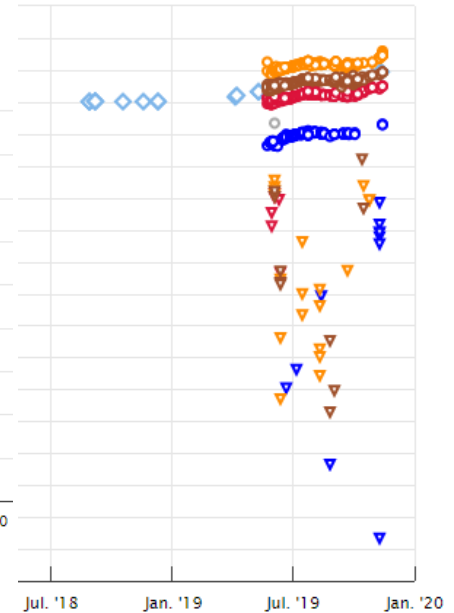
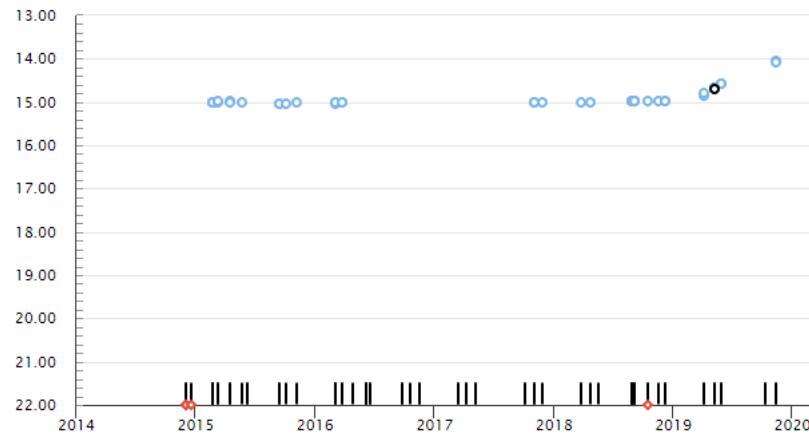
(0.35 mag rise in Galactic plane source over ~2 months)



Microlensing events

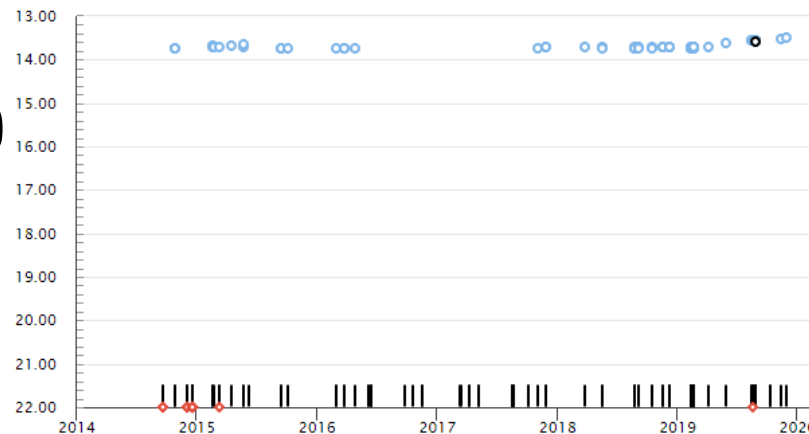
Gaia19bsy

(0.3 mag rise in
Galactic plane star
over 5 months)



Gaia19dvk

(~0.2 mag increase)



Observation date (TCB)

Optical follow-up of the CV candidate system Gaia18aes

AT 2018ik/Gaia18aes

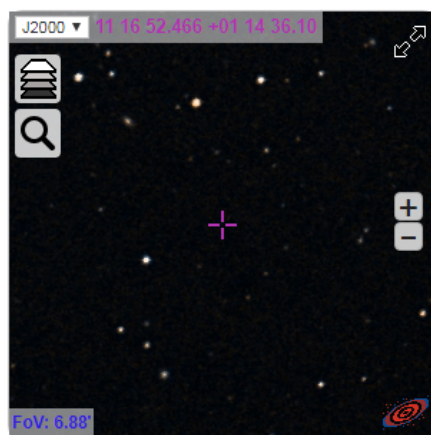
Source Group: GaiaAlerts

Coordinates (J2000): RA = 11 16 52.47, Dec = +01 14 36.10

Discovery date: **2018-01-17** 21:20:09 (JD=2458136.3889931)

Remarks: **candidate CV**, bright blue declining transient on faint blue SDSS source with previous events (CSS)

Autors: A. Delgado et al., 2018, <https://wis-tns.weizmann.ac.il/object/2018ik>



TNS ID
AT2018ik

RA - DEC
169.21861 1.24336
11:16:52.47 01:14:36.10

Galactic coords.
257.74538 55.58849

Alerting date
2018-01-17 21:21:06

Julian date
2458136.39

Alerting magnitude
15.77

Historic magnitude
None

Historic StdDev
None

Class
unknown

Publication date
Jan. 19, 2018, 12:23 p.m.

Other surveys detections

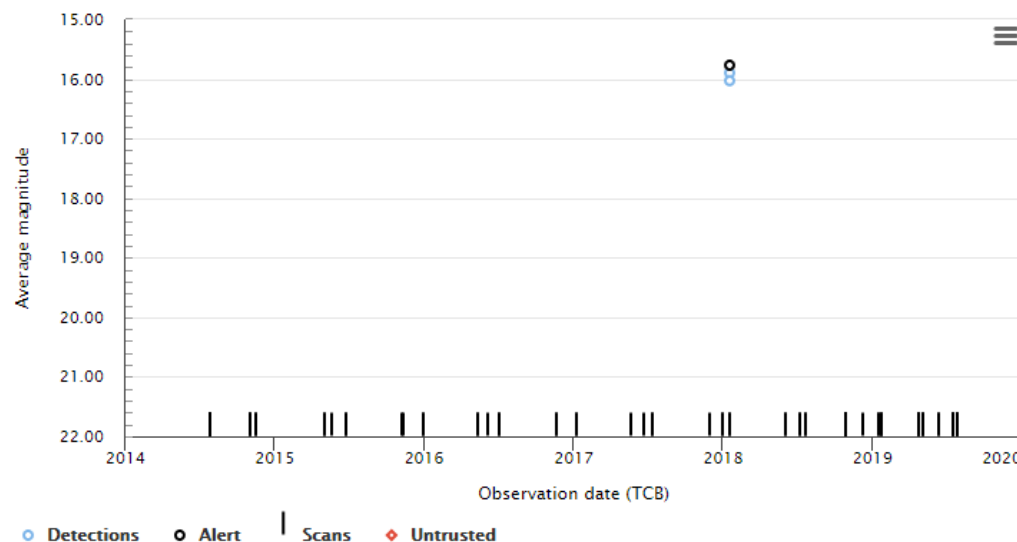
CSS140227:111652+011436 (0.42 arcsec); PS15ar (0.35 arcsec)

Comments

candidate CV, bright blue declining transient on faint blue SDSS source with previous events (CSS)

ATels

None



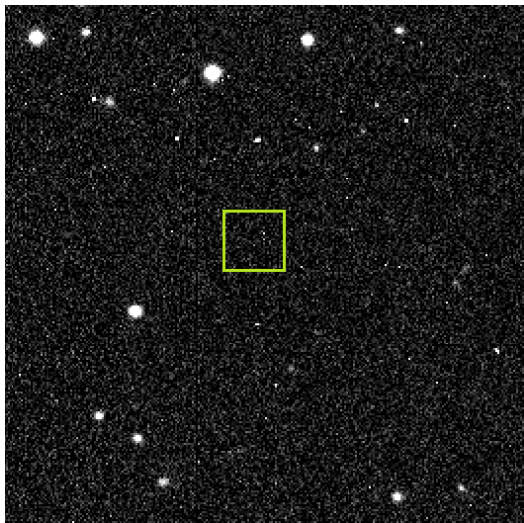
See [here](#) for an explanation of lightcurves.

[Get lightcurve data](#)

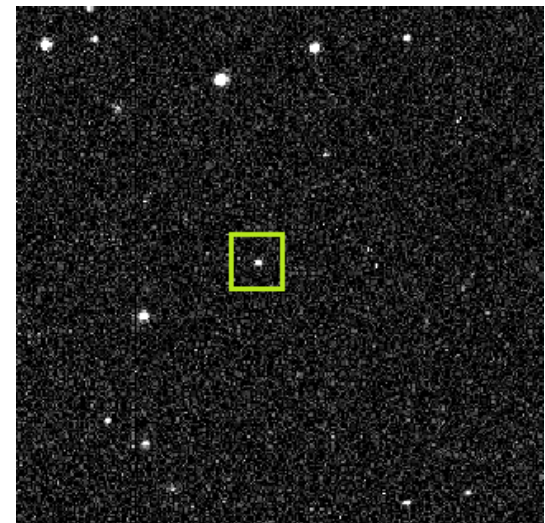
Optical follow-up of the CV candidate system Gaia18aes

We had begun to observe this object on 2018-01-25 using the astronomical facilities of the Kyiv Comet Station (**Lisnyky observatory**) (IAU code 585) and the **Terskol Observatory** (IAU code B18). Gaia18aes was detected at magnitude **R ~ 16** that indicated a fading trend in brightness of the source.

Further observations revealed a new flare in March 2019.

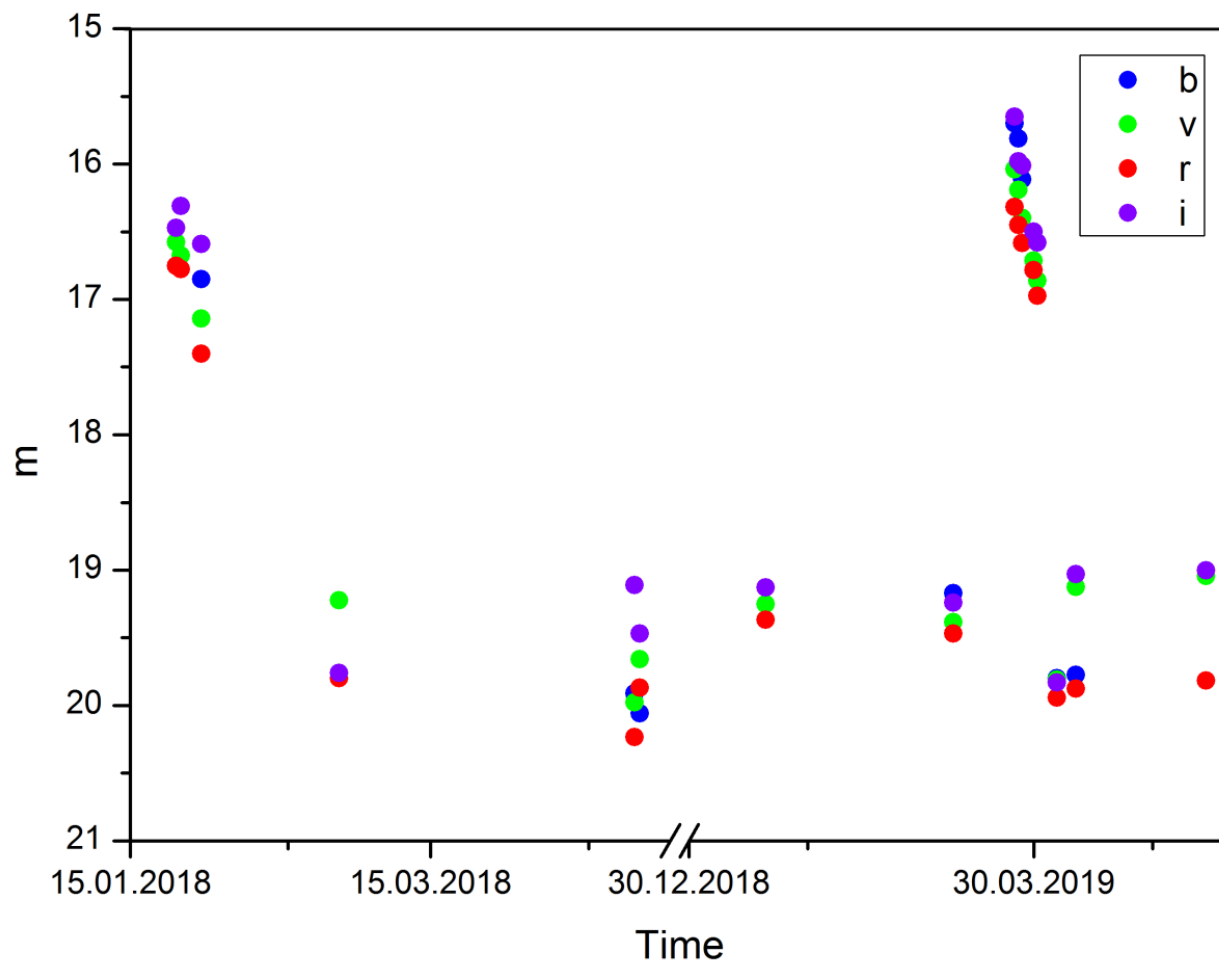


05.04.19, m = 20.1



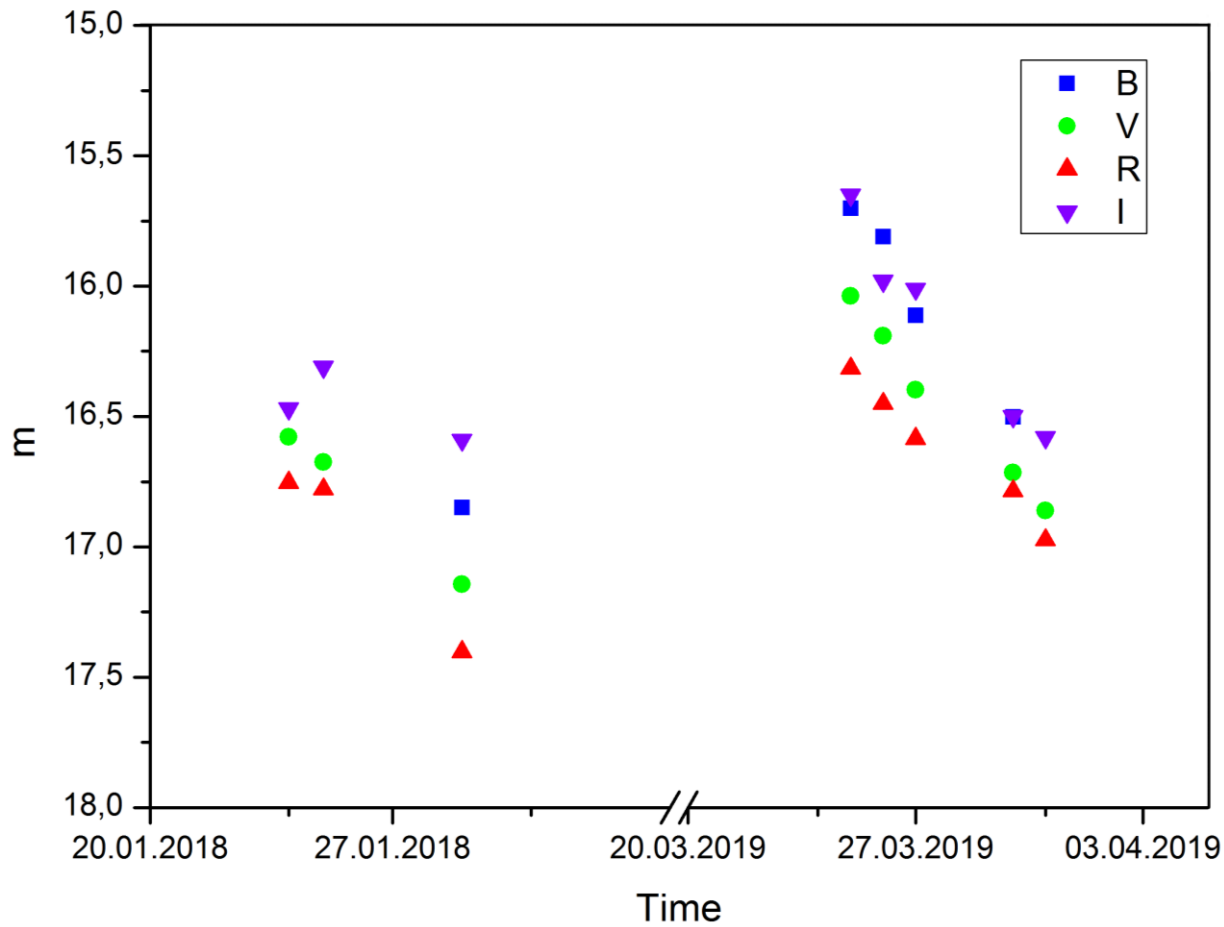
25.03.19, m = 16.3

Optical follow-up of the CV candidate system Gaia18aes. Results: light curve



From 24 january 2018
To 14 may 2019

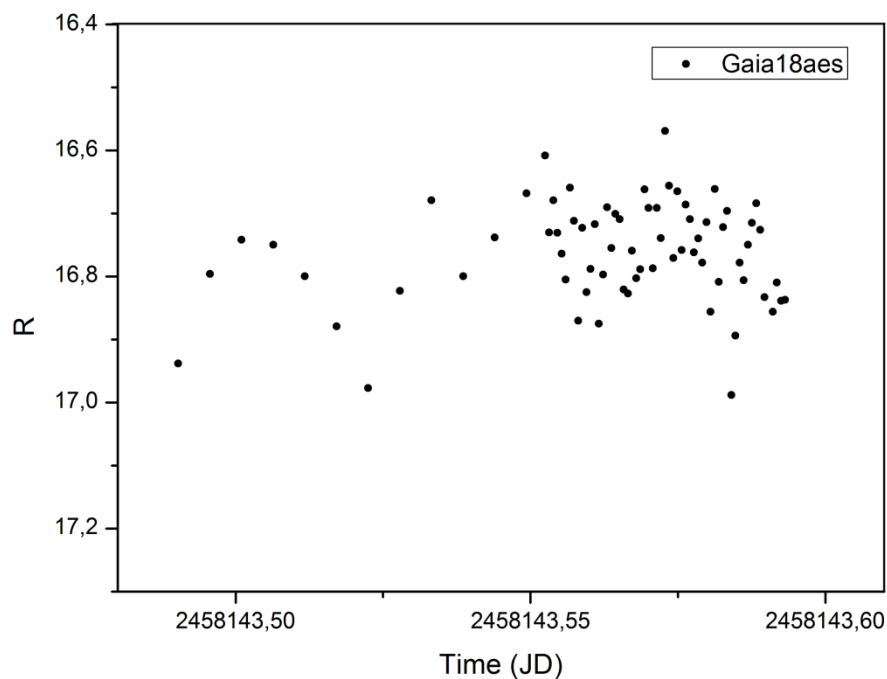
Optical follow-up of the CV candidate system Gaia18aes. Results: light curve of outburst



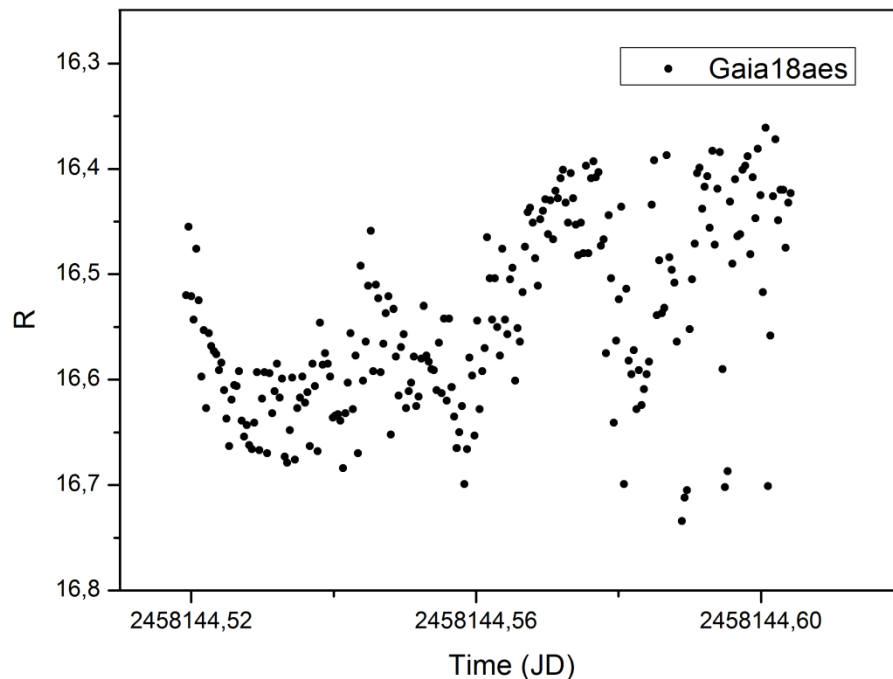
Zoomed outbursts

Optical follow-up of the CV candidate system Gaia18aes. Results: light curve of outburst

Variability in a hours

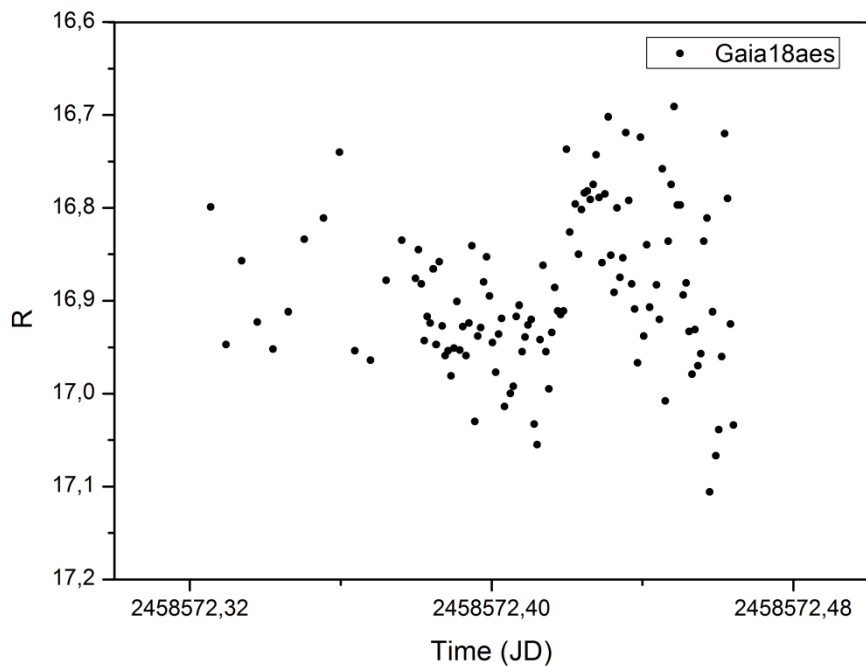


24.01.18, around 2 hours

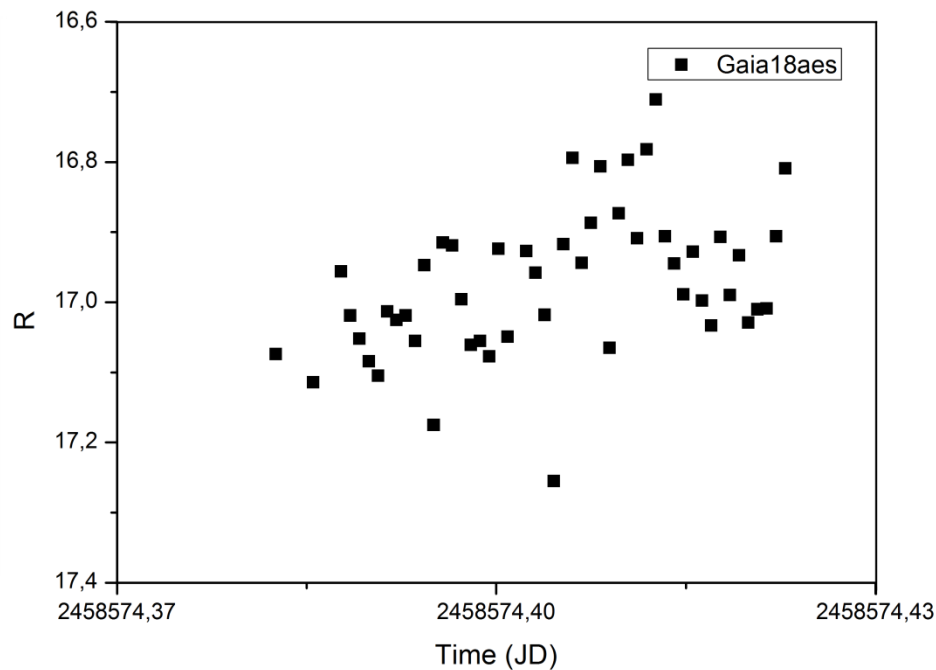


25.01.18, around 2 hours

Optical follow-up of the CV candidate system Gaia18aes. Results: light curve of outburst

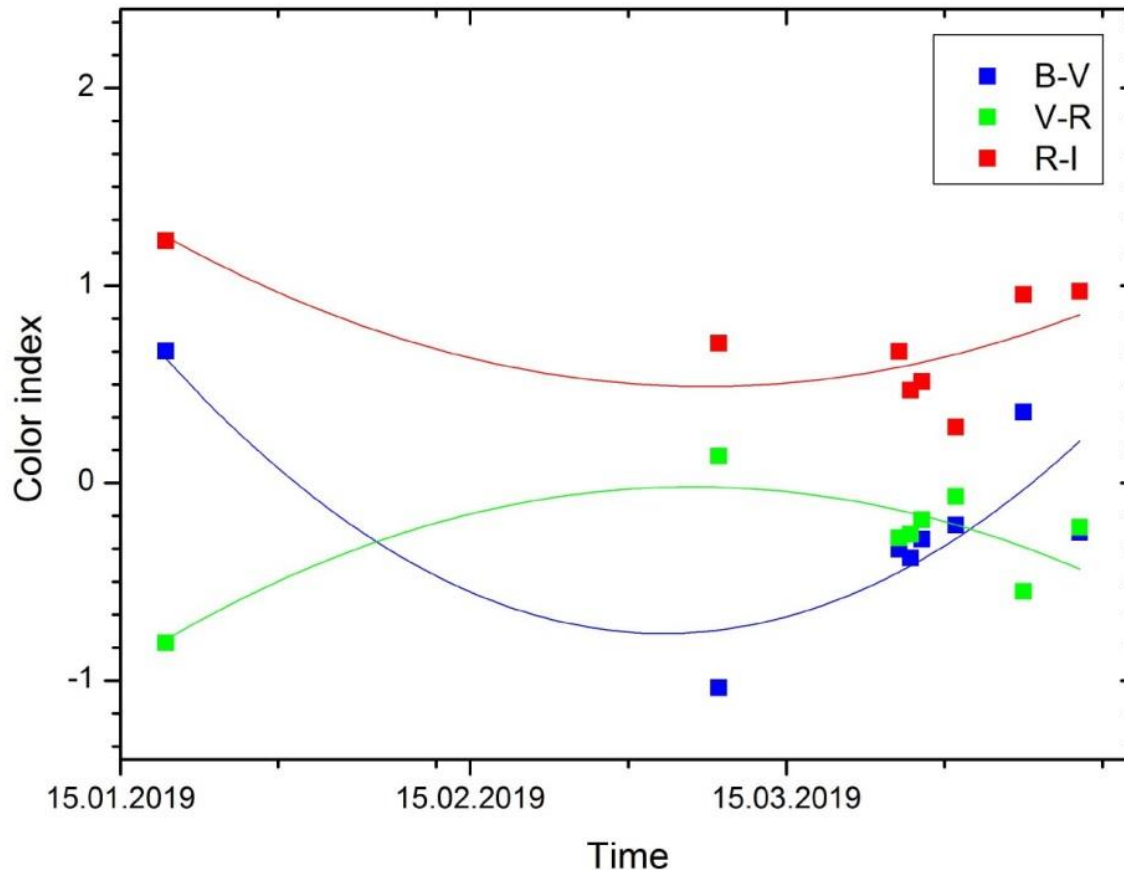


29.03.19, around 3 hours



31.03.19, around 1 hour

Optical follow-up of the CV candidate system Gaia18aes. Results: color index



For an outburst that was revealed by the end of March 2019.

Color indices during the outburst:

$$\mathbf{B-V = -0.304}$$

$$\mathbf{V-R = -0.199}$$

$$\mathbf{R-I = 0.484}$$

Conclusions

- ❑ A variability analysis on the shape of light curves of transient Gaia18aes has been carried out using BVRI photometric datasets gathered in 2018-2019.
- ❑ The presence of a low level variability on a time scale of hours was revealed.
- ❑ An outburst was detected by the end of March 2019, with an amplitude of more than 3 mags. Further observations of this CV candidate are encouraged.

Thank you for attention!

