

Exercise 1

Write one paragraph to report the following hypothetical situation.

- ✓ **Who:** FU Orionis (position, any other information?)
- ✓ **What:** Brighter than the nominal literature value by 1.2 mag in V, and 0.8 mag in B; remained the same state during the rest of the observing session
- ✓ **When:** observed September 17, 2021, UTC16:31 to 19:45, then clouded out for the night
- ✓ **Where:** LOT, (detector?)

(No need to interpret the result.)

**long term development!****Patrons needed: 28**[\[Previous | Next \]](#)

Apparent Outburst of Comet C/2014 UN271 (Bernardinelli-Bernstein)

ATel #14917; *Michael S. P. Kelley (U. Maryland), Tim Lister (Las Cumbres Observatory), Carrie E. Holt (U. Maryland), on behalf of the LCO Outbursting Objects*

Key Project

on **14 Sep 2021; 17:46 UT**

Credential Certification: *Tim Lister (tlister@lco.global)*

Subjects: Optical, Comet

[Tweet](#)

We report an apparent outburst of comet C/2014 UN271 (Bernardinelli-Bernstein), as seen in Las Cumbres Observatory 1-m telescope data. Following our initial observations (Kokotanekova et al. 2021, ATEL #14733), the comet had faded in brightness to $r=19.57\pm 0.04$ mag, measured within a 4" radius aperture on 2021 Sep 09.103 UTC and calibrated to the PS1 magnitude system. In our next data taken 2021 Sep 09.924 UTC the comet had brightened to $r=18.92\pm 0.04$ mag, a difference of -0.65 ± 0.06 mag. No background source is visible at the comet's coordinates in Digitized Sky Survey images. The brightening is confirmed in subsequent data taken 2021 Sep 11.335 UTC, $r=19.02\pm 0.04$ mag. On Sep 09, the comet was 19.89 au from the Sun, 19.44 au from the Earth, and at a phase angle of 2.6 deg.

This work makes use of observations from the Las Cumbres Observatory global telescope network.

Related

14917 [Apparent Outburst of Comet C/2014 UN271 \(Bernardinelli-Bernstein\)](#)

14759 [Comet C/2014 UN271 \(Bernardinelli-Bernstein\) exhibited activity at 23.8 au](#)

14733 [Newly discovered object 2014 UN271 observed as active at 20.18 au](#)

Information

1. FU Orionis is at R.A.=05^h 45^m 22.37^s, Decl.=+09°04'12.3" (J2000).
2. It is a T Tauri star, the prototype of the FU Ori type (eruptive young variable).
3. It has a nominal brightness of 9.60 mag at V and 10.72 mag at B.
(About the target; from SIMBAD)
 1. The star was measured to be brighter by 1.2 mag in V, and 0.8 mag in B, and remained the same during the observing session.
 2. The observations then were stopped because of bad weather.
(About the event)
 1. The observations were taken by the LOT.

Original submission

FU Orionis (R.A.=05^h 45^m 22.37^s, Decl.=+09°04'12.3", J2000), the prototypical FU Ori class of T Tauri stars, found to be brighter by 1.2 mag at V band and 0.8 mag at B band from its nominal brightness of $m_V = 9.60$ mag and $m_B = 10.72$. The observation is undertaken from 2021 September 17 UTC 16:31 to 19:45 with the Lulin One-meter Telescope, equipped with an ANDOR iKon-L 936 TE-cooling CCD camera, which is 2048×2048 pixels with a pixel size of $13.5 \mu\text{m}$. It remained the same brightness throughout the observing session until it is terminated by clouds.

Corrected version

FU Orionis (R.A.=05^h 45^m 22.37^s, Decl.=+09°04'12.3", J2000), the prototypical FU Ori class of T Tauri stars, foud to brighter by 1.2 mag at V band and 0.8 mag at B band ~~from~~ its nominal brightness of $m_V = 9.60$ mag and $m_B = 10.72$. The observation is undertaken from 2020 March 4 UTC16:31 to 19:45 with the Lulin One-meter Telescope, equipped with an ANDOR iKon-L 936 TE-cooling CCD camera, which 2048×2048 pixels with a pixel size of $13.5 \mu\text{m}$. It remained the same brightness throughout the observing session until it is teminated by clouds.

FU Orionis (R.A.=05^h 45^m 22.37^s, Decl.=+09°04'12.3", J2000), the prototypical FU Ori class of T Tauri stars, was found to be brighter by 1.2 mag at V band and 0.8 mag at B band than its nominal brightness of $m_V = 9.60$ mag and $m_B = 10.72$. The observations were carried out from 2021 September 17 UTC16:31 to 19:45 with the Lulin One-meter Telescope, equipped with an ANDOR iKon-L 936 TE-cooling CCD camera, which has 2048×2048 pixels with a pixel size of $13.5 \mu\text{m}$. The star remained the same brightness throughout the observing session.

FU Orionis, the prototypical abrupt young stars (FUors), was found to be brighter by 1.2 mag at V band and 0.8 mag at B band than its nominal brightness of $m_V = 9.60$ mag and $m_B = 10.72$ (SIMBAD). The observations were carried out, with the LOT, from 2021 September 17 UTC16:31 to 19:45, during which the star remained the same brightness until the run was clouded out.

Homework I

We observed FU Orionis (FU Ori) by Lulin One-meter Telescope (LOT) on September 17, 2021 UTC 16:31 to 19:45. FU Ori is an archetypically FUor star located in the Lambda-Orion star formation region (Labdon et al. 2021), with a heliocentric[?] of ~ 397.81 pc (Gaia Collaboration et al. 2022), at the position of $(\alpha_{J2000}, \delta_{J2000}) = (05\ 45\ 22.3647842544, +09\ 04\ 12.291320064)$ (SIMBAD). FU Ori is a young stellar object that manifests rapid change in brightness and undergoes irregular accretion events. In our observed session, we found the brightness of FU Ori increased by 1.2 magnitude in V band, and 0.8 magnitude in B band, which is brighter than previously measurement in literature. !! what

*What, by whom, when, how,
where*

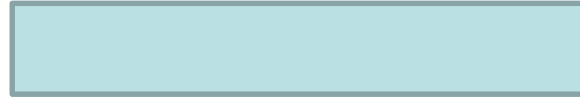
To: Professor Dr. Chen, Wen-Ping


Subject: An unusual luminosity hike in FU Orionis

Date: March 6, 2024

FU Orionis is a pre-main sequence star, which is about 1,500 light years away from Earth in the Orion constellation. After the initial burst in 1936, the star's extreme brightness began diminishing with time. A rapid brilliance of the star was observed on September 17, 2021, UTC 16:31 to 19:45, with the help of the Lulin Observatory Telescope (LOT). An escalation of 1.2 mag in V and 0.8 mag in B bands was detected while comparing to the past literature. Further studies are yet to be done for more accurate data. 3!

Scientific Writing Exercise 1



March 2024

A remarkable astronomical event was observed on September 17, 2021, when FU Orionis, a class of T Tauri star, exhibited a surprising peak in luminosity, shining 1.2 magnitudes brighter in V and 0.8 magnitudes brighter in B ~~bands~~ than previously documented. Observed by the **LOT Observatory**, the event unfolded from UTC 16:31 to 19:45, with FU Orionis maintaining its high level of luminosity throughout the observational period until clouded out. This anomaly prompts a reevaluation of our understanding of FU Orionis variables and highlights the complexities inherent in stellar evolution.

at
by LOT

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Assignment-2

11 March 2024

1 Astronomy Journals

Which ten?

Of the ten Astronomy Journals I have surveyed, five of them have associated publications, which may include letters, supplements, or companion series. The above-mentioned journals are:

1. The Astrophysical Journal Supplement Series (ApJS)
2. Astronomy & Astrophysics Supplement Series (A&A Supplement)
3. Publications of the Astronomical Society of the Pacific (PASP)
4. Monthly Notices of the Royal Astronomical Society (MNRAS)
5. Living Reviews in Solar Physics

2 Core Journals

The “core journals” are such publications which are considered as publishing the most relevant findings, and central concepts and are highly respected in the particular discipline. They are widely read by researchers and used for further development in the field. Some of the core journals in Astronomy and Astrophysics are given below:

1) The Astronomy and Astrophysics Review is a core journal published quarterly by Springer-Verlag GmbH Germany, part of Springer Nature. The journal is published in English language.

2) Living Reviews in Solar Physics is a peer-reviewed scientific journal published in English by Springer Science+Business Media. It doesn't have a fixed frequency for publication.

3) Nature Astronomy is a monthly journal published by Nature Portfolio in the English language.

4) Publications of the Astronomical Society of the Pacific (PASP) is a monthly journal published in English by the Astronomical Society of the Pacific.

5) The Astronomical Journal (AJ) is a monthly journal published by IOP for the American Astronomical Society. It is published in the English language.

Outburst / Brightening of ---
Hypothetical Situation

(Dated: March 12, 2024)

FU Orionis (R.A. = $5^h 45^m 22.37^s$, Dec. = $+09^\circ 04' 12.3''$), the FU Orionis class of prototypical variable star (Herbig 1977), was found to be brighter 1.2 mag in V band and 0.8 mag in B band than its normal brightness ($m_v = 9.60$ mag (Ducati 2002) and $m_B = 10.72$ mag (Høg et al. 2000)). The observations were carried out from 2021 September 17 UTC 16:31 to 19:45, with LOT, during the observation the star remained the same state until the observation was clouded out. which

REFERENCES

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|---|---|
| J. R. Ducati. VizieR Online Data Catalog: Catalogue of Stellar Photometry in Johnson's 11-color system. CDS/ADC Collection of Electronic Catalogues, 2237, 0 (2002), Jan. 2002. | G. H. Herbig. Eruptive phenomena in early stellar evolution. <i>ApJ</i> , 217: 693–715, Nov. 1977. https://doi.org/10.1086/155615 . |
| | E. Høg, C. Fabricius, V. V. Makarov, S. Urban, T. Corbin, G. Wycoff, U. Bastian, P. Schwekendick, and A. Wicenc. The Tycho-2 catalogue of the 2.5 million brightest stars. <i>A&A</i> , 355:L27–L30, Mar. 2000. |

(Spring?)

Scientific Writing Exercise 1



March 20, 2024

On September 17, 2021, ~~the~~ FU Orionis, ~~located at~~ (RA: 05h45m22.36s and Dec: 09°04'12.29") exhibited an unexpected increase in brightness compared to literature reports by 1.2 mag in V, 0.8 mag in B. The brightness enhancement observed at the Lulin Observatory using the Lulin One-meter Telescope (LOT) remained the same during the observing session, from UTC 16:31 to 19:45, after which the observation was concluded ~~due to~~ clouded out.

observations were carried out

what