



## UvA-DARE (Digital Academic Repository)

### UV brightening of the accreting millisecond X-ray pulsar SAX J1808.4-3658

Parikh, A.S.; Wijnands, R.

**Publication date**

2019

**Document Version**

Final published version

**Published in**

The astronomer's telegram

**License**

Unspecified

[Link to publication](#)

**Citation for published version (APA):**

Parikh, A. S., & Wijnands, R. (2019). UV brightening of the accreting millisecond X-ray pulsar SAX J1808.4-3658. *The astronomer's telegram*, 13000.  
<http://www.astronomerstelegam.org/?read=13000>

**General rights**

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

**Disclaimer/Complaints regulations**

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.


**Outside**

[GCN](#)  
[IAUCs](#)

**Other**

ATel on [Twitter](#) and [Facebook](#)  
[ATELstream](#)  
[ATel Community Site](#)

This space for free for your conference.



Growing Black Holes:  
 Accretion & Mergers

[ [Previous](#) | [Next](#) | [ADS](#) ]

## UV brightening of the accreting millisecond X-ray pulsar SAX J1808.4-3658

ATel #13000; *A. S. Parikh and R. Wijnands*  
 on 7 Aug 2019; 21:15 UT

Credential Certification: *Aastha Parikh (A.S.Parikh@uva.nl)*

Subjects: Ultra-Violet, Neutron Star, Transient, Pulsar

Referred to by ATel #: [13001](#), [13006](#), [13026](#), [13077](#)

Recently, on 30 July 2019, Russell et al., (2019) reported an optical brightening of the transiently accreting millisecond X-ray pulsar SAX J1808.4-3658 but with, at that point, no associated X-ray brightening. This optical brightening was thought to be indicative of an imminent outburst.

Since then the source has continued to be monitored using ground-based observatories in the optical and using the Swift in the X-rays. New observations examined by Goodwin et al., (2019) show that the source has very recently further brightened in the *i'* band (between 4 and 6 August 2019) and in the X-rays on 6 August 2019, suggesting the onset of the anticipated new accretion outburst.

We have examined the recent observations of SAX J1808.4-3658 carried out by the UVOT on board Swift to determine if the source also showed a brightening in the UV emission. We used the Level 2 data products and determined the source brightness using the uvotsource tool. A circular source region, centred on the source position, having a radius 6 arcsec was used. A circular background region having a radius of 6 arcsec was placed on a source free location on the CCD. We found that the X-ray and optical brightening was accompanied by a UV brightening. This rise can be conclusively seen in the UVW2 band: 20.1 mag on 6 August (upper limit <20.9 mag on 3 August, with similar upper limits during the earlier observations) and marginally in the UVW1 band: 20.3 mag on 5 August (upper limit <20.4 mag on 1 August and during the earlier

### Related

- 13162 [SAX J1808.4-3658 is back to the quiescent level](#)
- 13103 [Multiple reflare in SAX J1808.4-3658 during the outburst decline according to optical observations](#)
- 13077 [NICER detects a high luminosity reflare from SAX J1808.4-3658](#)
- 13026 [MeerKAT detection of SAX J1808.4-3658 at 1.3 GHz](#)
- 13022 [NuSTAR observation of the latest outburst of SAX J1808.4-3658](#)
- 13006 [SALT spectroscopy of the accreting millisecond pulsar binary SAX J1808.4-3658 during its recent increased activity](#)
- 13001 [NICER detects X-ray pulsations from the rapidly brightening SAX J1808.4-3658](#)
- 13000 [UV brightening of the accreting millisecond X-ray pulsar SAX J1808.4-3658](#)
- 12993 [Likely new outburst of the accretion-powered millisecond pulsar SAX J1808.4-3658 indicated by increased optical and X-ray intensity](#)
- 12982 [MeerKAT observations of the AMXP SAX J1808.4-3658](#)
- 12964 [Optical brightening of SAX J1808.4-3658 with no X-ray detection - precursor to new outburst?](#)
- 7469 [REM Optical/NIR observations of SAX J1808.4-3658 during outburst](#)

observations). This UV brightening supports the notion that the source may be exhibiting renewed outburst activity, its first since 2015.

We have two additional Swift UVOT observations approved (before the source is Moon constrained on 13 August) to further track the rise of the current outburst in all three UV bands per observation. We thank the Swift PI Brad Cenko and his designate B. Sbarufatti for approving these observations.

Russell et al., (2019) ATel #[12964](#)  
Goodwin et al., (2019) ATel #[12993](#)

<b>7380</b>	<b>INTEGRAL observations of SAX J1808.4-3658 currently in outburst</b>
<b>7379</b>	<b>Very rapid turn on of SAX J1808.4-3658</b>
<b>7376</b>	<b>Swift UVOT and XRT observations of the recent outburst of SAX J1808.4-3658</b>
<b>7371</b>	<b>SWIFT/XRT confirmed the new outburst of SAX J1808.4-3658</b>
<b>7364</b>	<b>Swift/BAT detected a possible new outburst of the X-ray transient SAX J1808.4-3658</b>

---

[ **Telegram Index** ]

R. E. Rutledge, Editor-in-Chief

Derek Fox, Editor

Mansi M. Kasliwal, Co-Editor

[rrutledge@astronomerstelegam.org](mailto:rrutledge@astronomerstelegam.org)

[dfox@astronomerstelegam.org](mailto:dfox@astronomerstelegam.org)

[mansi@astronomerstelegam.org](mailto:mansi@astronomerstelegam.org)