



UvA-DARE (Digital Academic Repository)

Search for the NIR counterpart to GRB130807A/SWIFTJ1759.2-2736 in quiescence

Greiss, S.; Steeghs, D.; Jonker, P.G.; Maccarone, T.; Torres, M.A.P.; Heinke, C.; Wijnands, R.

Published in:
The astronomer's telegram

[Link to publication](#)

Citation for published version (APA):

Greiss, S., Steeghs, D., Jonker, P. G., Maccarone, T., Torres, M. A. P., Heinke, C., & Wijnands, R. (2013). Search for the NIR counterpart to GRB130807A/SWIFTJ1759.2-2736 in quiescence. *The astronomer's telegram*, 5372.

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.

The Astronomer's Telegram

Post | Search | Policies
Credential | Feeds | Email

23 Jun 2014; 11:16 UT

Outside

GCN
IAUCs

Other

ATel on [Twitter](#) and [Facebook](#)
ATELstream
ATel Community Site
MacOS: [Dashboard Widget](#)

This space is free for your conference.

IAU Symposium 305
Polarimetry: From the Sun to
Stars and Stellar
Environments
Costa Rica
Nov 30-Dec 5 2014

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

Search for the NIR counterpart to GRB130807A/SWIFTJ1759.2-2736 in quiescence

ATel #5372; *S. Greiss (Warwick), D. Steeghs (Warwick/CfA), P. G. Jonker (SRON/RU/CfA), T. Maccarone (Texas Tech), M. A.P. Torres (SRON), C. Heinke (Alberta), R. Wijnands (UvA), the GBS consortium, the VVV consortium*
on 6 Sep 2013; 16:09 UT

Credential Certification: *Sandra Greiss (s.greiss@warwick.ac.uk)*

Subjects: Infra-Red, X-ray, Gamma Ray, Transient



Related

- 5372 [Search for the NIR counterpart to GRB130807A/SWIFTJ1759.2-2736 in quiescence](#)
- 5268 [Swift observations of GRB 130807A/SWIFT J1759.2-2736](#)

In order to search for the counterpart of the transient source SWIFTJ1759.2-2736 (Atel #5268), we investigated near-infrared (NIR) data of the Galactic Bulge region obtained as part of the VVV survey (Minniti et al. 2010, *New Astronomy*, Volume 15, 433). The observations took place while the source was in quiescence. The data have been acquired using the 4-m VISTA telescope at Paranal observatory (Chile), using a camera with pixel sampling of 0.34 arcsec. We analysed JHKs images obtained on the 11th of April 2010, at airmass 1.15 and under average seeing conditions of 0.80 arcsec. Total on source exposure times were 24s for the J-band images and 8s for both H- and Ks-band frames. VVV has an additional Ks-band variability survey, which we exploited in order to obtain as much information as possible on the transient prior to the outburst. In this region, we find 11 Ks-band observations, spanning from April 2010 to June 2012. In the band-merged catalogues, we find 3 NIR sources within the 90% confidence ~ 3.8 arcsec error circle (including the X-ray and NIR matching errors) from the SWIFT position reported in Atel #5268. The nearest source was found at ~ 1.9 arcsec (RA = 17:59:12.04, Dec = -27:36:58.5) with the following magnitudes: J = 14.52 \pm 0.03, H = 13.61 \pm 0.02 and Ks = 13.30 \pm 0.02. The second nearest source is at ~ 2.5 arcsec (RA = 17:59:12.25, Dec = -27:36:55.5) with J = 17.14 \pm 0.29, H = 15.88 \pm 0.18 and Ks = 16.15 \pm 0.29. Finally the third closest match is found at ~ 3.8 arcsec (RA = 17:59:11.92, -27:36:59.5) with J = 16.37 \pm 0.14, H = 15.31 \pm 0.10 and Ks = 14.89 \pm 0.09. When inspecting the VVV Ks-band variability data, none of them show significant variability in their light-curves. However, in the Ks-band images, we notice a faint object, closer to the transient's SWIFT position but not detected in the VVV catalogues. We stack all 11 Ks-band exposures we have and perform optimal photometry to estimate a magnitude value for this object. We find the source to lie at ~ 1.3 arcsec of the transient's reported position (RA = 17:59:12.21, Dec = -27:36:56.4) with Ks $\sim 16.31 \pm 0.2$. VVV only performed the additional variability survey in the Ks-band, therefore we do not have colours for this object. Extinction values in this region obtained using red clump giants with VVV data (Gonzalez et al. 2011, *A&A*, 534, 3) return the following values: $A_J = 0.91$ mag, $A_H = 0.60$ mag and $A_{Ks} = 0.38$ mag, when using Cardelli et al. (1989, *ApJ*, 345, 245) extinction law towards the Galactic Center. We look at the de-reddened colours of the three matches for which we have JHKs magnitudes. The colours of the match at ~ 1.9 arcsec seem consistent with a late-type K dwarf, whereas those of the source at ~ 3.8 arcsec seem more consistent with a K giant or supergiant. The match at ~ 2.5 arcsec is at the faint limit of the VVV survey and its magnitudes (hence colours) can not be trusted for any sort of rough spectral classification. In summary, we have detected several NIR sources near the reported 3.6 arcsec

error circle radius of SWIFT (Atel #5268). None of these sources seem to be variable. We encourage deeper NIR and optical photometric and spectroscopic observations of this region to find the true counterpart of SWIFTJ1759.2-2736.

[**Telegram Index**]

R. E. Rutledge, Editor-in-Chief

rrutledge@astronomerstelegam.org

Derek Fox, Editor

dfox@astronomerstelegam.org

Mansi M. Kasliwal, Co-Editor

mansi@astronomerstelegam.org