

COMMISSIONS 27 AND 42 OF THE IAU
INFORMATION BULLETIN ON VARIABLE STARS

Number 5032

Konkoly Observatory
Budapest

16 February 2001

HU ISSN 0374 – 0676

EUVE J0854+390: A NEW CATAclySMIC VARIABLE

CHRISTIAN, D.J.¹; CRAIG, N.²; DUPUIS, J.²; ROBERTS, B.³

¹ Computer Sciences Corporation/Space Telescope Science Institute, Baltimore, MD, e-mail: dchrist@stsci.edu

² University of California, Berkeley, Space Sciences Lab, e-mails: ncraig@ssl.berkeley.edu,
jdupuis@cea.berkeley.edu

³ FUSE/Johns Hopkins University, Baltimore, MD, e-mail: broberts@pha.jhu.edu

We report the identification of a new Cataclysmic Variable (CV) in the field of EUVE J0854+390. EUVE J0854+390 was detected in the Extreme Ultraviolet Explorer (EUVE) all-sky survey (Bowyer et al. 1996) at 30 cts/ksec in the 100 Å bandpass and reported in the Lampton et al. 1997 catalog of fainter EUVE sources with ROSAT detections. Follow-up optical observations of the class of unidentified EUVE all-sky survey sources (“NOID’s”) has previously had success in finding cataclysmic variables (e.g. EUVE J1429-38.0, Craig et al. 1995, 1996, & EUVE J2115-586, Craig et al. 1996; Vennes et al. 1996). We observed the field centered on the EUVE position of EUVE J0854+390 on 18 February 1997 as part of our EUVE NOID optical identification program with the Lick Shane 3-meter telescope and Kast spectrograph. The Kast is a double spectrograph with a blue side covering the wavelength region of 3600–5250 Å and \approx 5500–7500 Å on the red side. This setup yields a spectral resolution of 1.7 Å/pixel.

There were three exposures of the CV, starting at 10:04 UT on Feb 18, 1997 and these are summarized in the observing log in Table 1. two of the exposures the slit was centered on other stars in the and the exposures were much shorter. result of spectra centered on other objects was also in the slit. The optical spectra of EUVE J0854+390 showed Balmer, He I (4471, 5876 Å) and He II (4686 Å) lines strongly in emission with the continuum increasing toward the blue and indicating the source is a CV, probably magnetic. The first 25 minute exposure found the lines to be blue-shifted by \approx 200 km/s and was followed by a 60-minute exposure. This second observation found the source to be \approx 2 times brighter and with the emission lines shifted to the red. The average line shift was about \approx 6 Å or \approx 400 km/s. The third exposure, started at 11:45 UT, found the source to be \approx 7 times fainter than the previous exposure with lines red-shifted by \approx 100 km/s, although limited by low signal. The measured radial velocities suggest the source period is less than 2 hours, although the poor sampling is not definitive, and further observations are needed. We show the two brightest optical spectra of EUVE J0854+390 from 18 February 1997 in Figure 1.

For the brightest spectrum we derived *B* magnitude of 16.4 for EUVE J0854+390 using spectrophotometry. The optical position derived from the Digitized Sky survey plate (see Figure 2) is: R.A. 08^h54^m14^s.2, Dec. +39°05′39″.6 (J2000) placing it about 15″ from the EUVE and ROSAT (1RXS J085413.1+390543) source positions. Follow-up observations are encouraged.

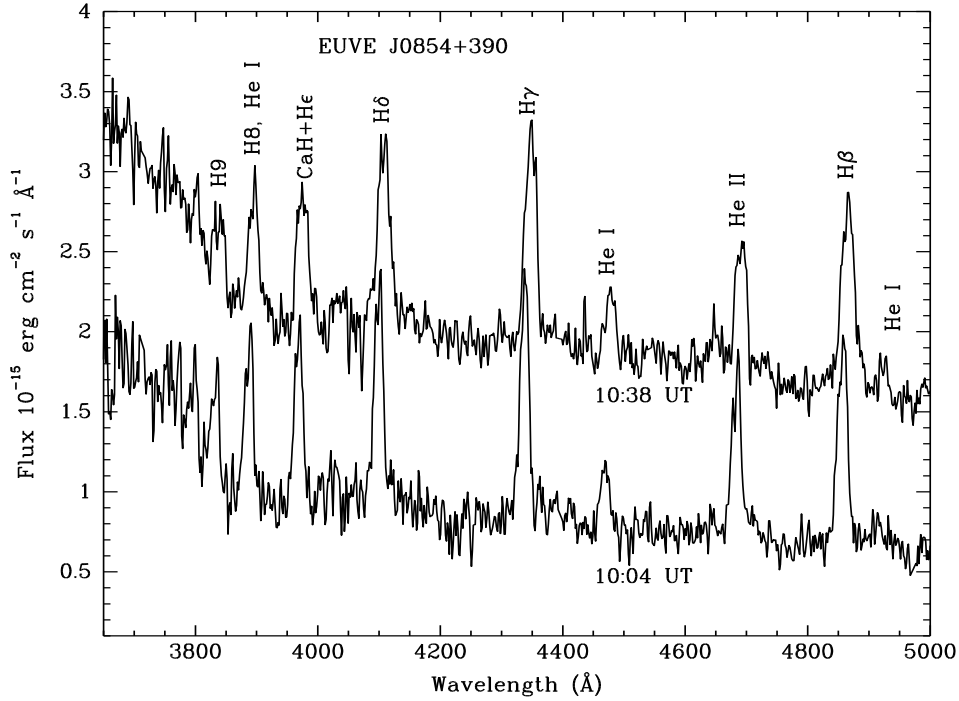


Figure 1. Kast blue-side spectra for CV EUVE J0854+390. The bottom spectrum was the first 30-minute exposure (10:04 UT) and was followed by an hour integration started 34 minutes later (10:38 UT). The second exposure found the source to be ≈ 2 times brighter with lines red-shifted by $\approx 6 \text{ \AA}$

Table 1: Optical observing log

Source	R.A. _{opt}	Dec. _{opt}	Observation date	Exposure (sec)	Air mass
EUVE J0854+390	08 ^h 54 ^m 14 ^s .2	+39°05′39″.6	18 Feb 97 10:04 UT	1500	1.21
			18 Feb 97 10:38 UT	3600	1.32
			18 Feb 97 11:45 UT	1800	1.68

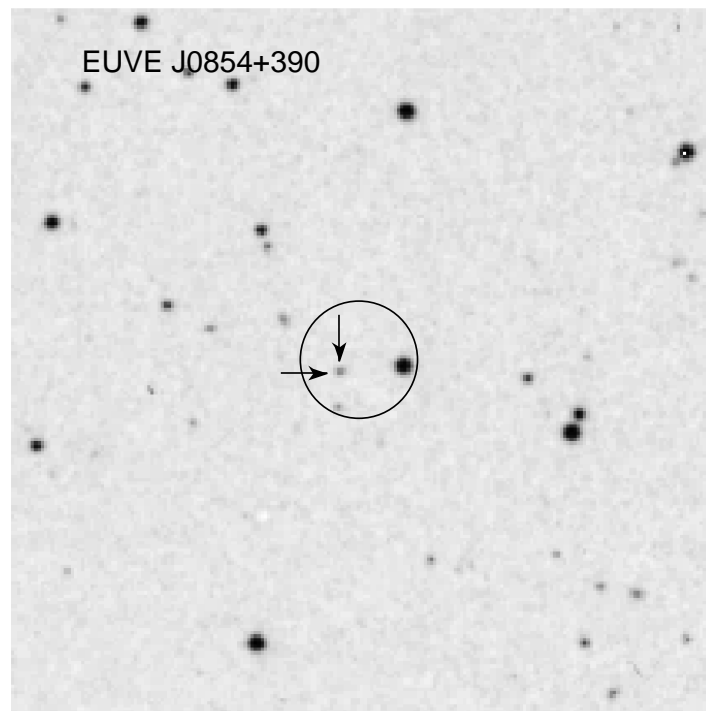


Figure 2. Optical finding chart ($6' \times 6'$) from the Digitized Sky Survey centered on the EUVE position from Lampton et al. (1997). The arrow indicates the CV. EUVE/ROSAT pointing uncertainty is indicated with a circle with a radius of $30''$. North is up and east to the left

References:

- Bowyer, S., Lampton, M., Lewis, J., Wu, X., Jelinsky, P., & Malina, R.F., 1996, *ApJS*, **102**, 129
Craig, N., Howell, S.B., Sirk, M.M., Malina, R.F., 1996, *ApJ*, **457**, L91
Craig, N., Oliverson, R., 1995 *IAUC*, No. 6201
Craig, N., 1996 *IAUC*, No. 6297
Lampton, M., Lieu, R., Schmitt, J.H.M.M. Bowyer, S., Voges, W., Lewis, J., & Wu, X., 1997, *ApJS*, **108**, 545
Vennes, S. et al., 1996, *AJ*, **112**, 2254