

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

Number 5281

Konkoly Observatory
Budapest
27 May 2002

HU ISSN 0374 – 0676

EUVE J2244–15.9: A NEW SPECTROSCOPIC BINARY

CHRISTIAN, DAMIAN J.¹; MATHIOUDAKIS, MIHALIS²; VENNES, STEPHÁNE³

¹ Department of Physics & Astronomy, Johns Hopkins University, 3400 N. Charles Ave., Baltimore MD, 21218; e-mail: damian@pha.jhu.edu

² Queens University of Belfast, Belfast, UK

³ Astrophysical Theory Centre, Australian National University, Canberra, ACT 0200, Australia

Over 40% of the sources in EUV surveys have been identified as late-type stars (e.g. the Second EUVE Catalog; Bowyer et al. 1996; ROSAT 2RE catalog, Pye et al. 1995). EUVE J2244–15.9 (HD 215341) was discovered as a spectroscopic binary in our optical observations of late-type stars selected from EUVE all-sky survey catalogs, including the Lampton et al. (1997) catalog of fainter EUVE all-sky sources jointly detected with the ROSAT PSPC. The Lampton et al. catalog concentrated on detections in the EUVE Lexan band which is centered on 100 Å.

Our optical observations were searching for chromospheric activity indicators, such as Ca II H&K and H α in emission in a sample of EUV-selected late-type stars. We observed EUVE J2244–15.9 for 1 hour on 5 and 6 of August 1997 using the 24 inch coudé auxiliary telescope (CAT) and the Hamilton echelle spectrograph (Vogt 1987) at Lick observatory. We used a 2048 \times 2048 CCD binned 2 \times 2 with a dispersion of 0.033 Å/pixel at Ca H and K and 0.054 Å/pixel at H α ; the resulting velocity resolution is 7.5 km/s. Spectra were wavelength-calibrated with Th-Ar spectra and flat-fielded with quartz lamps. The observation log and line emission equivalent widths (eqw) from both components are presented in Table 1.

Table 1. EUVE J2244–15.9 Log

RA (J2000)	21 44 38
Dec (J2000)	–15 56 32
m_v	9.3
Sp. Type	dK1/2e
Obs. dates:	05/08/97 10:31:48 UT 06/08/97 09:39:22 UT
Exp. (sec)	3600 (\times 2)
Ca K (eqw)	4.0 Å
Ca H (eqw)	2.1 Å
H α (eqw)	0.4 Å
EUVE Lexan cts/s	0.028
EUVE Obs. Flux	3.9×10^{-12} (ergs cm ⁻² sec ⁻¹)

The optical spectrum of EUVE J2244–15.9 clearly shows the tell-tale signs of emission lines from a spectroscopic binary. We show a Ca H&K and H α spectra in Figure 1. We calculated the observed flux using a coronal emissivity model with $\log(T) = 6.8$ as described in Mathioudakis et al. (1995). We then calculated a measure of the coronal efficiency, L_{euv}/L_{bol} . We find EUVE J2244–15.9 with $L_{euv}/L_{bol} \approx 10^{-3}$, and this is at the upper end of active late-type stars found in the EUVE and ROSAT all-sky surveys (e.g. Christian and Mathioudakis 2002; Jeffries & Jewell 1993). EUVE J2244–15.9 merits further observations as a coronally active late-type binary.

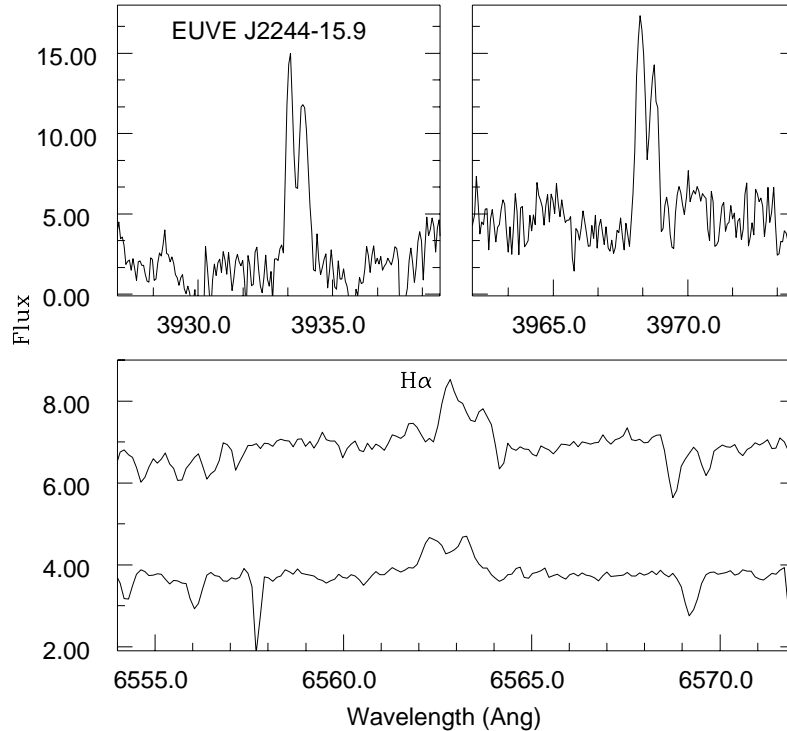


Figure 1. Ca H&K and H α spectra of spectroscopic binary, EUVE J2244–15.9 (flux in units of 10^{-13} ergs cm^{-2} sec^{-1} \AA^{-1}). (*Top*) panel shows Ca K on left and Ca H on right from the August 06 observation. (*Bottom*) panel shows the H α spectra from August 05 and 06 August (upper H α spectrum scaled by a factor of 1.5).

References:

- Bowyer, S. et al., 1996, *ApJS*, **102**, 129
 Christian, D. J., & Mathioudakis, M., 2002, *AJ*, **123**, 2796
 Jeffries, R. D., & Jewell, S. J., 1993, *MNRAS*, **264**, 106
 Lampton, M. et al., 1997, *ApJS*, **108**, 545
 Mathioudakis, M. et al., 1995, *A&A*, **300**, 775
 Pye, J. P., et al., 1995, *MNRAS*, **274**, 1165
 Vogt, S., 1987, *PASP*, **99**, 1214