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V393 Hya: A NOVA-LIKE WITH VARIABLE EMISSION

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The Edinburgh-Cape Blue Object Survey (Kilkenny et al. 1997) classified the object EC 10578-2935 as a possible cataclysmic variable (CV), a classification later confirmed by Sefako et al. (1999). These classifications were based on low resolution spectrograms (100 Å/mm dispersion, corresponding to 4 Å resolution), and the colors $B-V = -0.01$ and $U-B = -0.83$, which placed the object just below the black body line in $(U-B, B-V)$, consistent with the weak Hβ and Hγ emission seen in the spectrograms. These facts have resulted in the GCVS classification NL: (possible nova-like) under the name V393 Hya (Kazarovets et al. 2003).

We have obtained the first high-resolution (R∼48000) spectrum of EC 10578-2935, using FEROS at the ESO/MPI-2.20m telescope at La Silla, Chile on 2004-01-13 (HJD 2453018.84285), during technical tests. Standard data reduction was performed with MIDAS including bias and flatfield correction, order extraction and wavelength calibration. Finally, a crude flux calibration was performed using a standard star taken several hours earlier. The spectra have a FWHM resolution of 0.15Å and cover the range 3800–9000Å. The S/N in the spectrum is only around 10 over most of the spectral range.

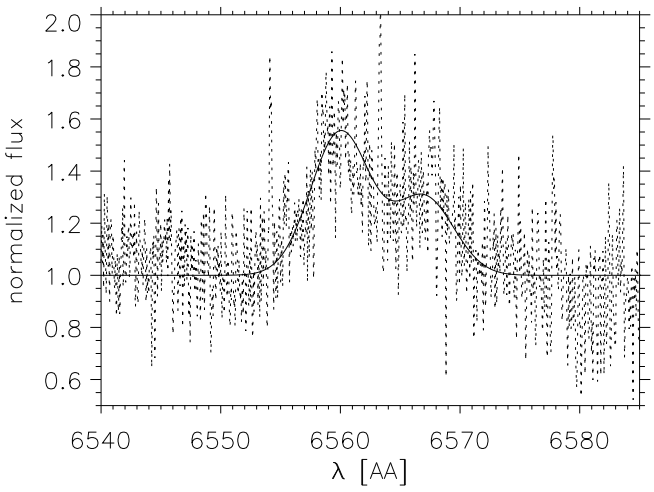

Figure 1. The region around Hα, with a two-gaussian fit to the profile.

The spectrum is essentially flat and featureless, the only exception being weak Hα in emission, as shown in Fig. 1.

The fit in Fig. 1 is a two-gaussian fit, with the gaussians centered at 6560.0 Å and 6567.0 Å respectively. The width of both profiles is 3.5 Å and we measure FWZI $\approx$ 16 Å, resulting in radial velocities of 160 km/s and 740 km/s respectively. These low values indicate that the system is seen at low inclination, with the typical double profile of the accretion disc barely resolved at our high spectral resolution.

Chen et al. (2001) found all Balmer lines in emission, although weak, plus He II and N III/C III. They estimate FWZI $\sim$ 20 Å for the Balmer lines. Our spectrum is completely flat and featureless at all these positions, which partly is due to our low S/N. We establish the equivalent width for Hα as $W(\mathrm{H}\alpha) = -18$ Å. For the other Balmer lines as well as for He II and the N III/C III blend we can only give upper limits to the equivalent widths, assuming the lines have the same shape as Hα. We derive $W < 14$ Å for these lines.

The system seem to show variable emission when comparing our findings with the literature. Also Chen et al. (2001) find that the strength of the Balmer lines changed between their 1990 and 1992 data sets.

We find that the continuum fits a power law of the type $\lambda^{-2.7}$, consistent with a hot accretion disk, as found e.g. for old novae (Schmidtobreick et al., 2004). Together with the weakness of the emission lines we conclude that V393 Hya is a cataclysmic variable of nova-like subtype, showing a hot accretion disc. The unfortunately rather low inclination under which V393 Hya is seen, makes it an unpromising object for time resolved follow–up studies of the accretion disc.

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