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SPECTROSCOPIC OBSERVATIONS OF NOVA VULPECULAE 1984 NO. 1

Spectroscopic observations of Nova Vul 1984 No. 1 have been obtained with the McGraw-Hill Observatory 1.3 meter telescope. These data were taken using the intensified reticon scanner. Two scans in the blue were obtained on 1984 August 12 (UT 7^h13^m) and August 17 (UT 8^h02^m), with a resolution of ~5 Å. A red scan was obtained on 1984 August 22 (UT 3^h48^m), also with a resolution of ~5 Å. The night sky has been subtracted from the data.

The blue spectral scans have properly calibrated wavelengths between λ 4046 and λ 5570 Å. The scan of August 12 shows the Balmer series, Fe II lines, and the Ca II H and K lines all in emission. No absorption features are present. However, absorption features are evident on the August 17 scan. Also, on this second scan the Ca II K and Fe II emission lines are weaker compared to the Balmer series. Table I lists the measured lines together with their velocities, corrected to the sun. Figure 1 is a plot of the August 17 scan. The H β peak is at ~16500 counts.

TABLE I
 MEASURED LINES AND RADIAL VELOCITIES

λ (lab)	Ion (mult)	August 12		August 17	
		λ (obs)	v(km/s)	λ (obs)	v(km/s)
4101.737	H δ	4099.01	-206	4099.21	-193
4173.450	Fe II (27)	4172.17	-99	4173.77	+14
4233.167	Fe II (27)	4230.71	-181	4231.11	-155
4340.468	H γ	4340.34	-16	4341.79	+82
4861.332	H β	4859.40	-126	4861.56	+5
4923.921	Fe II (42)	4921.69	-143	4923.88	-11
5018.434	Fe II (42)	5015.78	-166	5016.71	-112
5169.030	Fe II (42)	5166.53	-152	5167.26	-112
5234.620	Fe II (49)	5230.44	-247	5231.42	-192
5275.994	Fe II (49)	5273.13	-170	5275.10	-60
5316.693	Fe II (48,49)	5313.56	-184	5314.31	-143

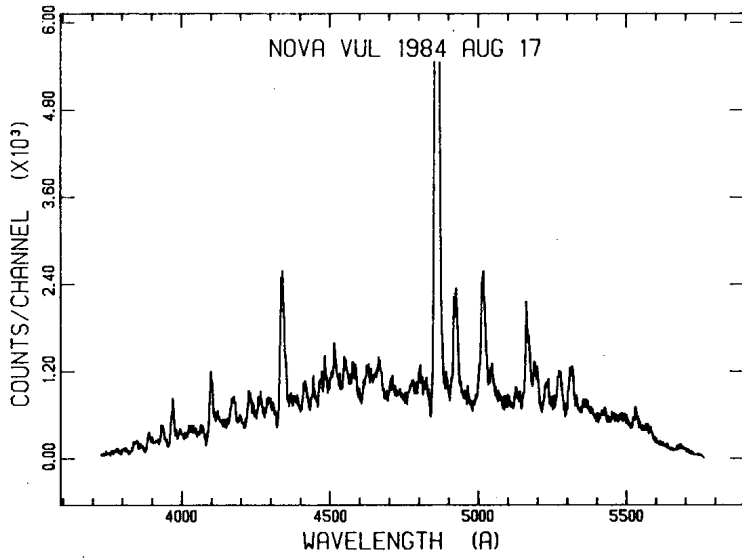


FIGURE 1

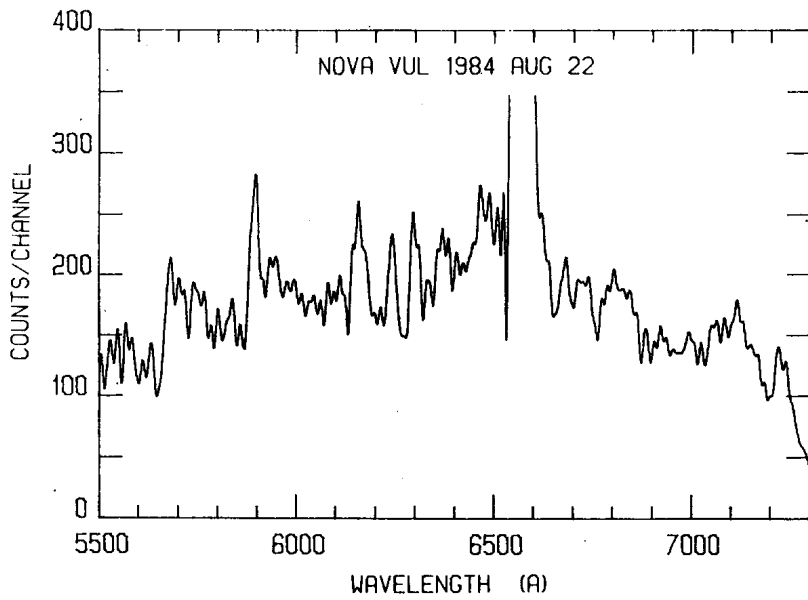


FIGURE 2

The red spectral scan has properly calibrated wavelengths between $\lambda 5852$ and $\lambda 7400 \text{ \AA}$. This spectral scan shows a strong $H\alpha$ in emission along with a very small, violet absorption feature. The full width of $H\alpha$ extends from $\lambda 6538$ to $\lambda 6605 \text{ \AA}$ (-1151 to $+1911 \text{ km/s}$). Other emission and absorption lines are present, but firm identifications could not be easily made. Figure 2 is a Fourier-smoothed plot of the August 22 scan. The $H\alpha$ peak is at ~ 6500 counts.

Various observers have reported visual estimates of the apparent magnitude of Nova Vul 1984 No. 1 to the IAU Circulars. A plot of the values from IAU Circulars Nos. 3963, 3964, 3968, 3969, 3971, and 3977 shows that the nova reached a peak brightness of $\sim 6^m.3$ on August 4 and then fell to $\sim 8^m.3$ on August 9. No further observations were reported until August 16 ($\sim 8^m.5$). Therefore, for both blue observations the apparent visual magnitude was about $8^m.5$. By the time of the red observation, the nova had fallen to $\sim 7^m.8$ from a second luminosity peak ($\sim 7^m.3$) on August 19.

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