HIGH DISPERSION OBSERVATIONS OF ε Aur FROM SEPT. 1982 TO MARCH 1983

Between September 1982 and March 1983 I obtained high dispersion spectra of ε Aur in selected regions using the Palomar 200-inch coude spectrograph and the Dominion Astrophysical Observatory 48-coude spectrograph. All spectra were taken with the 90-mm ITT image tube and IIa-D emulsion. Since further observations during this eclipse are not currently planned, the raw data will be presented here for others who may find them useful.

In Table I we list our radial velocities for the sodium D lines, KI lines,

Table I

Radial Velocity (km s^{-1})

Date (UT)	Disp. (A/mm)	metals	Hα (abs)	Hα (em)	NaI	KI	OI (λ7772)
3.53 Sept.1982	6.7	+3.5+1.1	+11.3+1.0	+72	+12.8	+21.8+1.5*	+14.3
15.41 Oct. 1982	4.8				(+19.1+1.4)†		
					(+ 6.7∓0.8)		
18.60 Oct. 1982	4.8					+22.4+0.5$^\Delta$	
19.17 Mar. 1983	4.8	+1.5	+25.4$^\nabla$		+15.5$^\square$		
21.14 Mar. 1983	4.8				+13.9	+ 9.9+1.5**	

* partially resolved component at +8+2 km s^{-1} is present

† two nearly equal components are clearly present but poorly resolved

Δ partially resolved component at + 4 km s^{-1} is present

∇ the deepest point in the line is at +36.6 km s^{-1} and an uncertain absorption feature may be present at -4.6 km s^{-1}. Weak emission further to the violet may be present

□ the deepest point of the D2 line is at +5.3 km s^{-1}

** a little fuzz is visible on the positive side of the KI lines

Hα, and a few other features. While most of the sodium and potassium features are surely circumstellar there is certainly an interstellar component present. In the direction of ε Aur interstellar gas is seen mostly with radial velocities between +5 and +10 km s^{-1}. The sodium D lines and potassium lines

show incipient resolution which may involve the interstellar components.

The equivalent widths of the sodium and potassium lines are given in Table II. For potassium, blending with atmospheric O_2 makes the line at λ7664

Table II
Equivalent Widths (in Å)

Date	D1	D2	KI(λ7699)
3.53/9/1982	0.77	0.82	0.36
15.41/10/1982	0.95	1.03	–
18.60/10/1982	–	–	0.40
21.14/3/1983	1.24	1.33	0.50

unmeasurable on the dates of these observations. The increase in equivalent widths already noted by Pathasarathy and Lambert is evident.

Blending and partial resolution of the circumstellar and interstellar features may account for much of the velocity structure which is only partially discernable at the available resolution.

This research was conducted by the author as a guest investigator at the Palomar Observatory, Calif. Inst. of Technology and the Dominion Astrophysical Observatory, Herzberg Institute for Astrophysics, National Research Council, Canada.

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