

RADIAL VELOCITIES OF PROPER-MOTION STARS*

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ABSTRACT

Radial velocities have been determined for 39 stars of large proper motion. New spectral types are given, except for the M dwarfs and the white dwarfs. For these, Kuiper's spectral types have been adopted. Three dwarfs have the H and K lines of Ca II in emission, and one of these (BD+55°1823, M1) also shows the hydrogen lines in emission.

The present list of radial velocities is a continuation of two earlier lists by D. M. Popper under the same title.¹ The spectrograms used were obtained with the 82-inch telescope of the McDonald Observatory and the Cassegrain spectrograph equipped with glass prisms and an $f/2$ Schmidt camera, giving a dispersion of 76 Å/mm at $H\gamma$. In a few cases, a set of two quartz prisms and a 500-mm camera, giving a dispersion of 55 Å/mm, were used.

The arrangement of the results, given in Table 1, is the same as that used in the earlier papers by Popper. The visual magnitudes were given by Kuiper, except for the HR stars and the magnitudes shown in italics, which are photovisual determinations by Seyfert.² The probable errors, given in the sixth column, were computed in the usual way, except when two spectrograms were obtained; in the latter case, the probable error was taken as one-third of the difference between the measured velocities. The "quality" of a velocity depends on the number of lines measured on each spectrogram, the number of spectrograms, and their probable errors. The highest quality is indicated by "A"; the lowest, by "F." In the fourth column is given the number of spectrograms secured for measurement; an asterisk following the number indicates that these plates have a dispersion of 55 Å/mm at $H\gamma$; otherwise, the spectra have 76 Å/mm in $H\gamma$.

The H and K lines were found to be in emission in the following dwarfs:

Star	Type
BD+55°1823.....	M1
BD+51°2402.....	K5
BD-17°6769.....	K8

The hydrogen lines also appear in emission in the spectrum of BD+55°1823.

I wish to record my thanks to Dr. Gerard P. Kuiper for suggesting this list of objects and for the use of unpublished data. Dr. O. Struve and Mr. C. A. Bauer have kindly secured for me a few of the spectrograms.

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¹ *Ap. J.*, 95, 307, 1942; 98, 209, 1943.

² *Ap. J.*, 91, 117, 1940.

TABLE 1
RADIAL VELOCITY AND SPECTRA OF PROPER-MOTION STARS

Star	α (1900)	δ (1900)	m_v	Type	No.	Vel.	P.E.	Quality	Notes
-31°325.....	0 ^h 48 ^m 1	-30°54'	7.2	dK4	2	+ 2	$\pm$ 3	B	
-23°693.....	1 48.0	-22 56	8.7	dK9	2	+ 28	2	D	
HR 857.....	2 47.7	-13 11	6.1	dK1	3	+ 17	4	C	
Furuhjelm 10.....	3 02.8	+45 22	10.1	dM2	2	+ 5	3	C	
40 Eri B.....	4 10.7	- 7 49	9.6	wA	2	- 20	9	F	
+21°652.....	4 23.1	+21 41	9.2	dK9	1	- 35	6	D	
HR 1614.....	4 55.9	- 5 52	6.5	dK4	3	+ 35	4	C	1
γ Lep B.....	5 40.3	-22 29	6.3	dK3	2	- 11	1	C	2
+26°2606.....	14 44.6	+26 08	9.8	dF0	2	+ 34	2	A	
-20°4399.....	15 59.7	-20 11	7.4	dK2	2	+ 34	2	A	
+55°1823.....	16 14.9	+55 32	10.1	dM1	2	- 34	4	B	
-12°4523.....	16 24.7	-12 25	9.8	dM5	2	- 4	2	C	
36 Oph C.....	17 10.1	-26 24	6.7	dK8	2*	0	1	A	3
-8°4501.....	17 42.0	- 8 44	10.8	sdF8	2	+ 91	1	A	
μ Her BC.....	17 42.5	+27 47	9.8	dM4	2	- 20	5	D	4
Barnard's star.....	17 52.9	+ 4 25	9.4	dM5+	3	-111	5	B	5
-13°4807 AB.....	17 53.0	-13 04	9.4	sdG5	2	+198	2	B	6
-3°4233.....	17 59.8	- 3 02	9.2	dM1	2	+ 34	3	C	
-18°4986.....	18 25.5	-18 58	7.0	dK2	1	- 50	2	D	
+13°3683.....	18 28.7	+13 03	10.6	sdF5	1	+112	11	F	
+51°2402.....	18 31.6	+51 39	8.6	dK5	2	- 39	3	C	
+45°2743.....	18 32.4	+45 39	10.2	dM0	2	- 28	1	A	
+59°1915 A.....	18 41.7	+59 29	8.9	dM3+	1	- 4	3	C	7
+59°1915 B.....			9.7	dM4	1	+ 3	7	C	7
+4°4048.....	19 12.1	+ 5 02	9.1	dM3	2	+ 35	1	B	
-21°5703.....	20 17.7	-21 40	8.5	sdG0	1	-178	9	C	8
AC+25°67928.....	20 20.5	+24 44	10.6	sdF0	2	-319	2	B	
Wolf 1346.....	20 30.1	+24 44	11.3	wA	2	+ 26	3	C	
-14°5850.....	20 42.0	-14 47	11.2	dF5	2	0	2	D	
Ross 775.....	21 24.8	+17 12	10.3	dM4+	3	+ 7	6	F	
-0°4234 A.....	21 27.0	- 0 13	9.7	dK0	2	- 78	2	B	9
-35°14849.....	21 27.7	-35 52	10.6	sdF	1	+103	13	F	
+27°4120.....	21 33.5	+27 16	9.8	dM0	2	- 12	2	C	
+21°4747 A.....	22 20.0	+22 04	9.0	dK4	2	+ 5	3	D	
-1°4323.....	22 31.0	- 1 21	10.3	dM0	2	+ 13	1	B	
-15°6290.....	22 47.9	-14 47	10.2	dM5	2	+ 8	1	B	
-14°6437 AB.....	23 11.9	-14 22	8.3	sdF8	2*	+ 23	6	A	10
-17°6769.....	23 27.6	-17 23	8.5	dK8	1	+ 3	5	C	
-26°16876 AB.....	23 56.7	-26 21	8.8	sdA8	2*	+ 36	2	A	11

NOTES TO TABLE 1

1. Since the velocity of this star has been suspected of variability, the individual values are given here:

1943, Aug. 20, 11:38 U.T..... $V = +43 \pm 5$ km/sec
 1943, Sept. 17, 11:20 U.T..... $V = +32 \pm 7$ km/sec
 1943, Sept. 17, 12:03 U.T..... $V = +30 \pm 7$ km/sec

The first plate has a dispersion of 55 Å/mm, and the last two 76 Å/mm, at H γ .

2. The velocity previously published is -9.7 ± 0.8 km/sec.
 3. The velocity obtained here (0 ± 1 km/sec) differs somewhat from that given in the *Lick Catalogue of Radial Velocities* (-10 ± 1) but agrees with the velocities of the other components of the system ($V_A = -0.2 \pm 0.5$ km/sec, $V_B = -0.6 \pm 0.3$ km/sec).
 4. The velocity of μ Her A is -16.1 ± 0.2 km/sec.
 5. BD+4°3561. The previously published velocity is -110 ± 4 km/sec.
 6. The large radial velocity is in accordance with Kuiper's suspicion that this star is a subdwarf.
 7. Previously published velocities are 0 ± 2 for A and $+7 \pm 3$ km/sec for B.
 8. A previously determined velocity is -179 km/sec.
 9. The companion is a white dwarf (Kuiper).
 10. A previous determination is $+6 \pm 2$ km/sec.
 11. A previous determination is $+61 \pm 5$ km/sec.