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HIGH RESOLUTION SPECTROSCOPIC ANALYSIS OF ORPHAN STREAM GIANTS

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ABSTRACT

Subject headings: Galaxy: halo, structure — Individual: Orphan Stream — Stars: K-giants

We observed the spectroscopic white dwarf HR6141 on March 15th, 2011 with the same slit configuration. The airmass during during this observation was 1.003. We assume all detected absorption lines in this spectrum are atmospheric, except for Hα. Continuum and absorption features in each echelle order were identified by eye and the spectrum was normalised using cubic splines with defined knot spacings. Overlapping echelle orders were stitched together and the normalised telluric template was interpolated onto the wavelength array for our observed stars. Each stellar spectrum was corrected by the normalised template adjusted by the ratio of the air masses, following the Beer-Lambert law:

$$d = \frac{s}{t^{X_{(obs)}/X_{(tel)}}} \quad (1)$$

We measured radial velocities for every target by cross-correlating each telluric-divided observed spectrum with a synthetic template of T_{eff} = 4500 K, $\log g$ = 2.5, [Fe/H] = -1.5, and [α/Fe] = 0.0 over the wavelength region 845 nm < Λ < 870 nm. Observed spectra were shifted to rest frame for line measurements. A number of radial velocity and halo standards were observed during this program, and our heliocentric velocities agree excellently with literature values.

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TABLE 1
Observed Targets

Star	α (J2000)	δ (J2000)	Air mass	S/N[a] (px^{-1})	V_{helio} (km s^{-1})	Comment
HD 136316	15 22 17.2	−53 14 13.9	1.118	335	-38.21 ± 1.09	
HD 141531	15 49 16.9	09 36 42.5	1.309	280	2.63 ± 1.02	
HD 142948	16 00 01.6	−53 51 04.1	1.107	271	30.26 ± 0.87	
HD 41667	06 05 03.7	−32 59 36.8	1.005	272	297.79 ± 1.72	
HD 44007	06 18 48.6	−14 50 44.2	1.033	239	163.41 ± 1.25	
HD 47536	06 37 47.7	−32 20 20.1	1.002	257	78.87 ± 1.21	
HD 76932	08 58 44.2	−16 07 54.2	1.158	289	119.18 ± 1.18	
HD 84903	09 47 19.3	−41 27 04.9	1.260	294	77.65 ± 1.41	
HD 59984	07 32 05.7	−08 52 56.1	1.111	402	55.74 ± 0.53	
HD 60060	07 29 59.6	−52 39 04.3	1.127	414	25.60 ± 1.08	
HD 60228	07 30 30.8	−54 23 58.6	1.139	338	48.58 ± 1.67	
OSS TGT 1	10 46 50.6	−00 13 17.9	1.363	48	218.15 ± 1.72	
OSS TGT 2	10 47 17.8	00 25 06.9	1.995	59	222.16 ± 1.28	
OSS TGT 3	10 47 30.3	−00 01 22.6	1.156	49	226.35 ± 1.27	
OSS TGT 4	10 49 08.3	00 01 59.3	1.881	48	227.50 ± 2.05	Poor seeing.
OSS TGT 5	10 50 33.7	00 12 18.3	1.295	31	249.01 ± 2.58	Poor seeing.
HR 6141	16 30 12.3	−25 06 52.0	1.003	406	-	Telluric std.

[a] S/N measured at 600 nm for each target.