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ERRATUM: "A LOW-LATITUDE HALO STREAM AROUND THE MILKY WAY" (ApJ, 588, 824 [2003])

Brian Yanny, Heidi Jo Newberg, Eva K. Grebel, Steve Kent, Michael Odenkirchen, Connie M. Rockosi, David Schlegel, Mark Subbarao, Jon Brinkmann, Masataka Fukugita, Željko Ivezic, Don Q. Lamb, Donald P. Schneider, and Donald G. York

The zero points of the stellar templates used to measure radial velocity in the main body of this paper have been found to be systematically in error. Correction of the radial velocities significantly increases the derived circular velocity of the stars in the planar stream, to 215 ± 25 km s^{-1}. The velocity dispersion of the stream is somewhat lower than earlier results with the modified analysis.

Two types of stars were studied in this paper. The original template for stars of type F, used to study the "Monoceros arc" Galactic structure, was incorrectly zero-pointed by 20 km s^{-1}. The original template for stars of type A, used to measure the Sagittarius dwarf tidal stream, produced radial velocities systematically shifted by 49 km s^{-1}. In both cases, the sign of the error is such that for nearly all stars, the correct values of the heliocentric radial velocities are lower than those originally quoted.

A cross-correlation of Sloan Digital Sky Survey (SDSS) spectra with templates from the ELODIE survey (C. Soubiran, D. Katz, & R. Cayrel, A&AS, 133, 221 [1998]) was performed to find new radial velocities for each star (D. Schlegel 2003, private communication). This showed that our radial velocities were systematically shifted by an amount that depends on the type of the star observed and the original template against which it was cross-correlated.

To determine the measurement error with the new templates, we identified 445 F-type stars and 1109 A-type stars that had been observed twice by the SDSS. These stars were chosen with the color and magnitude criteria used to select stars in Figures 6 and 9. The errors in the F stars were a good match to a Gaussian with a σ of 28 km s^{-1}. The errors in the A star comparison were significantly non-Gaussian, with large tails. A χ^2 fit to a Gaussian (similar to the technique we use in this paper to measure the width of the streams) yielded a σ of 35 km s^{-1}. Dividing by $\sqrt{2}$ to reflect two independent measurements, we derive a random error of 20 km s^{-1} for F stars and 25 km s^{-1} for A stars. The template matching errors in these blue (type A) stars using ELODIE spectral templates are somewhat larger than the errors with our previous analysis, but we found it useful to use ELODIE spectral templates to ensure that the zero points were accurate.

We also examined the measured stellar stream dispersions. Electronic versions of Figures 2, 6, and 9 of our paper are presented here with the corrected radial velocity determinations. The data were selected as described in the original paper.

Table 1 has been regenerated in its entirety, replacing columns (8) and (10). The radial velocity in column (8) has been replaced with the radial velocity determined from cross-correlation with ELODIE templates. The status flag in column (10) now indicates stars which were used to generate Figure 2. A "0" indicates that the star was either outside the color box or had a high cross-correlation error, and a "1" indicates that the star was used to fit stream properties.

Table 2 has been regenerated using the new results as well. Column (10) has been added to indicate the estimated number of spectra in the stream component. These numbers are used to compute the error in radial velocity, as described in the original paper. Column (11) shows the corrected circulation velocities, which are now consistent with those given in J. D. Crane, S. R. Majewski, H. J. Rocha-Pinto, P. M. Frinchaboy, M. F. Skrutskie, & D. R. Law (ApJ, 594, L119 [2003]). Note that the velocity dispersions of the planar stream are even tighter than originally measured, strengthening the case that the motion is coherent. Note that the mean velocity of the Sagittarius stream in the direction $(l, b) = (165°, -55°)$ is -160 km s^{-1}, in line with recent simulations by D. Martinez-Delgado, M. A. Gomez-Flechoso, A. Aparicio, & R. Carrera (2004, ApJ, in press [astro-ph/0308009]).

We would like to acknowledge Steve Majewski, who initially pointed out to us that radial velocities for stars he had measured in the halo streams were different from our radial velocities by 20–50 km s^{-1} (J. D. Crane, S. R. Majewski, H. J. Rocha-Pinto, P. M. Frinchaboy, M. F. Skrutskie, & D. R. Law, ApJ, 594, L119 [2003]). We also acknowledge T. Beers, C. Prieto, and R. Wilhelm for an independent radial velocity analysis, with which we could compare our measured radial velocities.

On-line material: color figures, machine-readable table

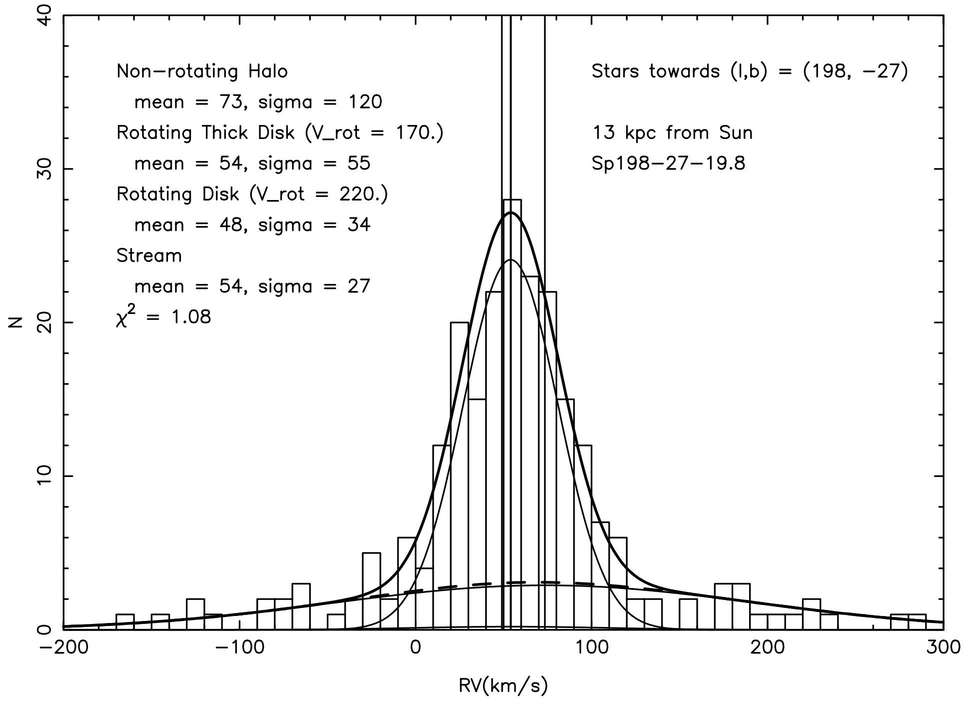

FIG. 2.—Histogram of radial velocities for 234 blue stars with $19.1 < g_0 < 20.3$ and $0.158 < (g - r)_0 < 0.3$ in the direction $(l, b) = (198°, -27°)$. Stars with radial velocity errors (as determined from cross-correlation with an ELODIE template of similar spectral type) of over 20 km s^{-1} were rejected. The stars have an average heliocentric radial velocity of 54 km s^{-1} with a remarkably small one-dimensional velocity dispersion of $\sigma = 18$ km s^{-1} after subtraction in quadrature of typical instrumental errors of 20 km s^{-1}. The distance to the stars was calculated from the turnoff magnitude listed in Table 2, assuming an absolute magnitude of $M_g = 4.2$ for turnoff stars. Also plotted are several models representing expected contributions and projected radial velocities of stars from the Milky Way's thin disk and thick disk , both negligible, for objects of this color at this distance from the Galactic center, and for the stellar spheroidal halo. The dotted line is the sum of the thin disk, thick disk, and halo components, and the thin solid line represents a Gaussian fit to the "extra" stars, where the contribution of the halo has been adjusted to minimize the overall fit (*thick black line*). The density excess and narrow dispersion are striking for these stars, which are apparently 20 kpc from the Galactic center. [*See the electronic edition of the Journal for a color version of this figure*.]

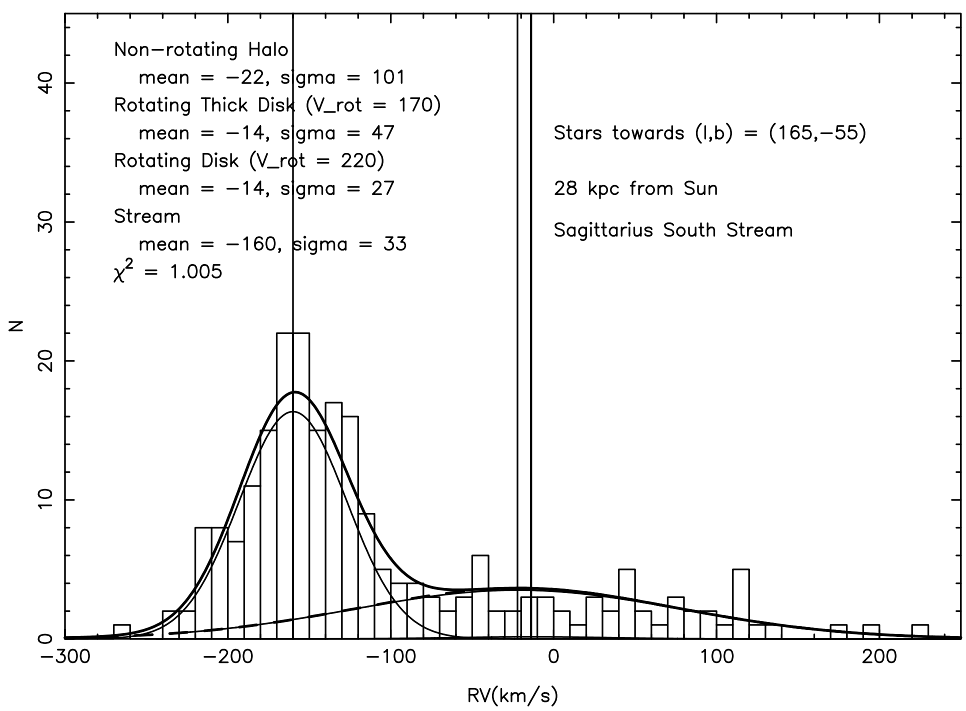

FIG. 6.—Histogram of radial velocities for very blue horizontal branch and blue straggler stars in the direction of the Sagittarius south stream (Fig. 5, *black box*). As in Fig. 2, stars with large radial velocity errors (as determined from cross-correlation with an ELODIE template of similar spectral type) were rejected. The stars have an average heliocentric radial velocity of –160 km s^{-1} and a velocity dispersion of $\sigma \sim 22$ km s^{-1}, after removing an instrumental spread of 25 km s^{-1}. [*See the electronic edition of the Journal for a color version of this figure*.]

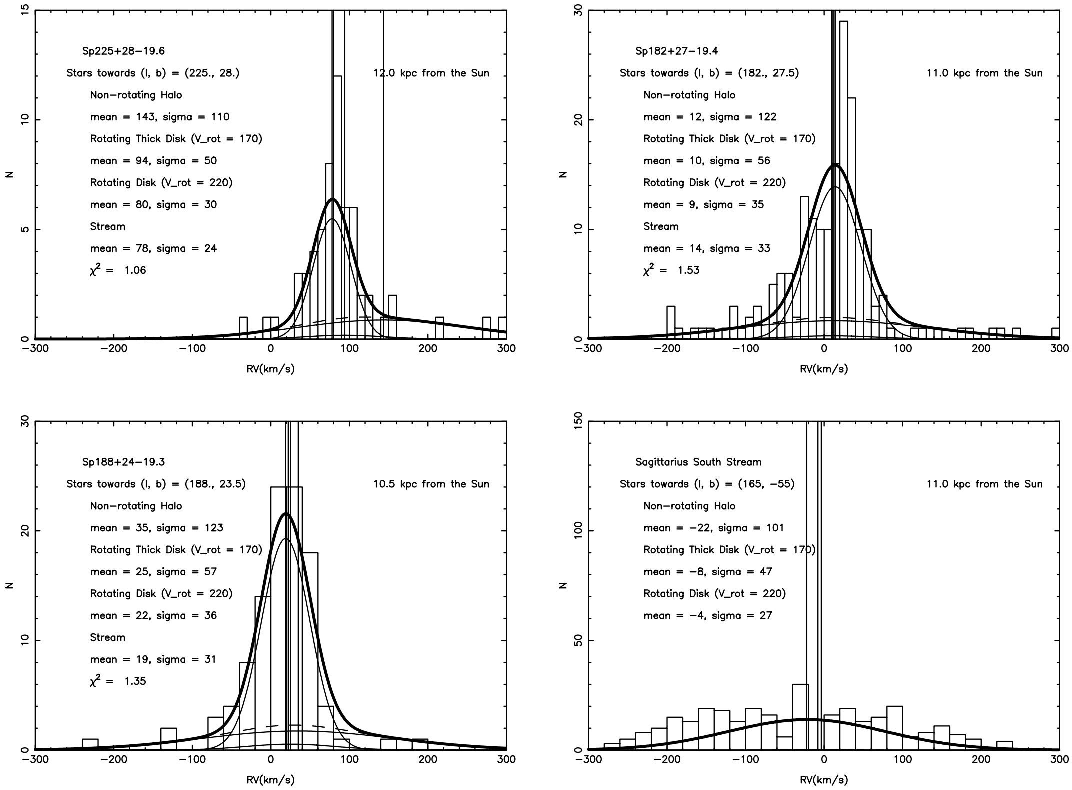

FIG. 9.—Histograms of radial velocities, with Galactic model fits, for the spectra of stars of the last four entries of Table 2. The distance to the stars was calculated from the turnoff magnitude listed in Table 2, assuming an absolute magnitude of $M_g = 4.2$ for turnoff stars. The central velocities and velocity dispersions of three low-latitude panels are consistent with one tidal stream circling the Galaxy at a distance of 18 kpc from the Galactic center. The lower right panel shows that the low-latitude structure seen in the other panels is not present at Galactic latitude $b \sim -55°$ (although one can see stars from the Sagittarius tidal stream scattering into our data at a radial velocity of about -160 km s^{-1}). [*See the electronic edition of the Journal for a color version of this figure.*]

TABLE 1
BLUE STARS NEAR $(l, b) = (198°, -27°)$

R.A. (deg) (1)	Decl. (deg) (2)	SDSS ID r-re-c-f-id (3)	Fiber ID plate-mjd-fiber (4)	g_0 (mag) (5)	$(g-r)_0$ (mag) (6)	$(u-g)_0$ (mag) (7)	RV (km s^{-1}) (8)	W_K (Å) (9)	Select Flag (10)	$E(B-V)$ (mag) (11)
70.598290......	−0.213427	0125-7-3-546-0318	797-52263-318	19.632	0.232	0.984	13.1	6.19	1	0.0606
70.603553......	−0.237871	0125-7-3-546-0219	797-52263-313	19.919	0.280	0.731	50.0	3.36	1	0.0573
70.622982......	0.047201	0125-7-4-546-0262	797-52263-359	19.788	0.264	0.708	98.5	5.01	1	0.0768
70.625600......	−0.057840	1752-0-3-332-0329	797-52263-358	19.230	0.272	1.042	66.5	4.11	1	0.0798
70.652157......	−0.544781	1752-0-2-333-0301	797-52263-311	19.397	0.223	0.892	192.1	3.76	1	0.0346
70.788270......	0.555787	0125-7-5-547-0374	797-52263-339	19.229	0.138	1.122	92.2	5.03	0	0.0788

NOTE.—Table 1 is published in its entirety in the electronic edition of the *Astrophysical Journal*. A portion is shown here for guidance regarding its form and content.

TABLE 2
SUMMARY OF STREAM DETECTION PIECES

Name (1)	α (2)	δ (3)	l (4)	b (5)	$\langle v_R \rangle$ (6)	$\sigma(v_R)$ (7)	g_0[a] (8)	$(g-r)_0$[a] (9)	N_{stream} (10)	v_{circ} (11)
Sp198−27−19.8[b]..................	72	0	198	−27	54 ± 5	18	19.8	0.24	138	173 ± 51
Sp225+28−19.6....................	133	2	225	28	78 ± 6	13	19.6	0.26	33	225 ± 29
Sp182+27−19.4....................	117	38	182	27	14 ± 5	26	19.4	0.28	115	...
Sp188+24−19.3....................	115	32	188	24	19 ± 5	24	19.3	0.28	75	272 ± 120
Sagittarius south stream.........	35	0	165	−55	−160 ± 5[c]	22[c]	21.5[c]	0.22[c]	137	...

[a] Magnitude and color of faint blue Monoceros turnoff except where indicated.
[b] Plate 797.
[c] For the Sagittarius stream, this $\langle v_R \rangle$ and σ refer to Sagittarius stream blue horizontal branch and blue straggler stars rather than those in the Monoceros structures. The color and magnitude are those of the Sagittarius stream.