TABLE 4

RECENT DETERMINTIONS OF OORT CONSTANTS AND AUXILIARY QUANTITIES

Reference	Class	A (km s^{-1} kpc^{-1})	B (km s^{-1} kpc^{-1})	$A-B$	$-(A+B)$
Branham (2008)	M III	16.86 ± 2.78	-6.34 ± 2.56	23.20 ± 7.79[a]	-10.52 ± 8.82[a]
Yuan et al. (2008)	O-B5	15.33 ± 0.94	-15.12 ± 0.71	30.45 ± 1.18[b]	-0.21 ± 1.18[b]
Yuan et al. (2008)	K-M III	15.86 ± 1.30	-14.57 ± 1.01	30.44 ± 1.65[c]	1.29 ± 1.65[c]
Bobylev & Bajkova (2010)	Galactic masers	17.8 ± 0.8	-13.2 ± 1.5	31.1 ± 1.7	4.6 ± 1.7
Branham (2009a)	B69 III	11.77 ± 1.66	-9.05 ± 1.38	20.82 ± 3.83[a]	-2.72 ± 1.04[a]
Branham (2009a)	A III	11.48 ± 5.45	-8.29 ± 4.23	19.77 ± 12.09[a]	-3.19 ± 7.44[a]
Branham (2009b)	K III	13.08 ± 1.72	-10.21 ± 1.47	23.29 ± 2.20[a]	2.86 ± 0.82[a]
Branham (2010)	F III	14.85 ± 7.47	-10.85 ± 6.83	23.35 ± 4.07[a]	-4.75 ± 4.63[a]
Shen & Zhang (2010)	Galactic Cepheids	17.42 ± 1.17	-12.46 ± 0.86	29.88 ± 1.45	-4.96 ± 1.45[d]

[a]Mean error calculated from equations (25) and (26) in Branham (2006).
[b]For heliocentric distance 0.2–3 kpc.
[c]For heliocentric distance 0.2–1 kpc.
[d]For heliocentric distance 0.2–3 kpc.

TABLE 5

VELOCITY DISPERSIONS FOR THE GIANT STARS

Spectral type	σ_x (km s^{-1})	σ_y (km s^{-1})	σ_z (km s^{-1})	Number of stars
O-B5	32.44 ± 5.04	26.16 ± 2.75	18.71 ± 2.39	107 total space motion
B6-9	39.25 ± 3.29	10.83 ± 1.16	14.07 ± 0.85	147 total space motion
A	26.95 ± 4.26	23.08 ± 2.14	16.46 ± 0.55	144 total space motion
F	36.89 ± 1.90	24.66 ± 1.16	17.97 ± 0.81	222 total space motion 369 tangential velocity
G	51.78 ± 0.55	42.81 ± 0.32	28.45 ± 0.22	658 total space motion 2417 tangential velocity
K	50.58 ± 0.99	42.42 ± 1.13	32.92 ± 0.56	880 total space motion
M	57.40 ± 1.67	45.86 ± 1.63	33.84 ± 1.02	480 total space motion

associated quantities such as $A - B$ and $-(A + B)$, the former equal to V_0/R_0 and the latter to (dV/dR), Perryman's Table 9.3 shows determinations up to 2007 and Table 4 post-2008 determinations, a total of 28. We see that A ranges from a minimum of 9.6 km s^{-1} kpc^{-1} to a maximum of 19 with a mean of 14.52 and a standard deviation of 2.52, again without discriminating as to number of stars, spectrum or luminosity class, or other indicators. The value given in Table 1 coincides well with this mean. For B the corresponding values are minimum of -24 km s^{-1} kpc^{-1}, maximum of -6.34, mean -12.63, and standard deviation of 3.30. Once again, the value for B given in Table 1 shows no anomaly. The only quantity that shows a possibly discrepant value is the K term, putatively significant only for the early stars, with determinations falling near 5 km s^{-1}, and close to 0 for later spectral types. The value in Table 1, large and moreover negative, seems discrepant. Its mean error, however, is also large and furthermore Branham (2009a) has shown that this term is sensitive to errors in the data; little credence, therefore, should be placed on its value. In a recent paper McMillan & Binney (2010) find that the most probable range for V_0/R_0 falls between 29.9 km s^{-1} kpc^{-1} and 31.6 km s^{-1} kpc^{-1}. Many of the values in Perryman's Table 9.3 and Table 3 fall outside of this range which, however, merely shows that quantities such as the distance to the centre of the Galaxy and the Sun's circular velocity are difficult to determine.

About the velocity ellipsoid little can be said because the only previous study of all of the G giants is that of Parenago (Delhaye 1965, p. 64), which used fewer stars, 345, and a different reduction method, the method of moments (Trumpler & Weaver 1962, pp. 283–286). The dispersions of the velocity ellipsoid are higher than those Parenago found, but this is a consequence of use of the SDP method; see Branham (2004).