TABLE 5

HIGH PRECISION DETERMINATIONS OF THE PROPER MOTION FOR THE CENTER OF THE LMC

Source	LMC Adopted Parameters	$\mu_\alpha \cos(\delta)$ mas yr^{-1}	μ_δ mas yr^{-1}	Proper Motion System
Kroupa et al. (1994) (field)		$+1.3 \pm 0.6$	$+1.1 \pm 0.7$	PPM
Jones et al. (1994)	JKL94	$+1.37 \pm 0.28$	-0.18 ± 0.27	Galaxies
Kroupa & Bastian (1997) (field)		$+1.94 \pm 0.29$	-0.14 ± 0.36	Hipparcos
ALP00	JKL94	$+1.7 \pm 0.2$	$+2.9 \pm 0.2$	3 Quasars
PAM02	JKL94	$+2.0 \pm 0.2$	$+0.4 \pm 0.2$	1 Quasar
Drake et al. (2001)		$+1.4 \pm 0.4$	$+0.38 \pm 0.25$	Quasars
Kallivayalil et al. (2006)	vDM02	$+2.03 \pm 0.08$	$+0.44 \pm 0.05$	21 Quasars
PCM06 (weighted average)	JKL94	$+1.8 \pm 0.1$	$+0.9 \pm 0.05$	4 Quasars
Piatek et al. (2008)	vDM02	$+1.956 \pm 0.036$	$+0.435 \pm 0.036$	21 Quasars
CMP09	vDM02	$+1.82 \pm 0.13$	$+0.39 \pm 0.15$	1 Quasar
Vieira et al. (2010)	vDM02	$+1.89 \pm 0.27$	$+0.39 \pm 0.27$	SPM, Hipparcos
This work (weighted average)				
field		$+1.42 \pm 0.09$	$+1.32 \pm 0.09$	4 Quasars
	vDM02	$+1.46 \pm 0.09$	$+1.25 \pm 0.08$	4 Quasars
	JKL94	$+1.71 \pm 0.09$	$+0.92 \pm 0.07$	4 Quasars

the next section. The PM values shown in Table 5 for this work are those obtained using both the new input parameters for the LMC given by van der Marel et al. (2002, hereafter vDM02), and those given by Jones, Klemola, & Lin (1994, hereafter JKL94). This is done in order to facilitate comparison of our results with those by the rest of the authors. The adopted LMC parameters by these authors are:

LMC Center: (R.A., DEC) = $(81^\circ.90, -69^\circ.87)J2000.0$. Heliocentric distance of the LMC center: 50.1 kpc. Inclination of the disk: $(i = 34^\circ.7)$. P.A. of the descending node: $(-50^\circ.1)$, by vDM02.

LMC Center: (R.A., DEC) = $(80^\circ.25, -69^\circ.28)J1950.0$. Heliocentric distance of the LMC center: 50.1 kpc. Inclination of the disk: $(i = 27^\circ.0)$. P.A. of the descending node: $(-10^\circ.0)$, by JKL94.

Note that there is a significant difference between the values of the inclination of the disk and the P.A. of the descending node in both sets of parameters. This will notoriously affect the final results for the PM of the LMC center.

The total LMC PM values obtained here, for both vDM02 and JKL94 input parameters, amount to $\mu = (+1.92 \pm 0.08)$ mas yr^{-1}, with a position angle $\theta = 49^\circ.2 \pm 3^\circ.4$, and to $\mu = (+1.94 \pm 0.08)$ mas yr^{-1}, with a position angle $\theta = 61^\circ.5 \pm 3^\circ.2$, respectively. The position angle is measured eastward from the meridian joining the center of the LMC to the north pole.

The above total PM values are quite compatible with several theoretical models (Murai & Fujimoto 1980; Lin & Lynden Bell 1982; Shuter 1992; Gardiner, Sawa, & Fujimoto 1994), which predict a proper motion for the LMC in the range 1.5−2.0 mas yr^{-1}, but they are only marginally compatible with the $\theta \approx 90^\circ$ position angle predicted by the same models.

As seen from Table 5, the values of the PM determined by our group (for the JKL94 input LMC parameters) confirm the results of the PCM06 study and show a reasonable agreement with some of the available data. Our "field" results agree particularly well with those of Kroupa, Röser, & Bastian (1994), who used the *Positions and Proper Motions Star Catalog* (Röser & Bastian 1993, PPM) as reference system. On the other hand, there is a significant discrepancy with ALP00's result in DEC, and some discrepancy with the one-field results by CMP09 for QJ0557-6713.

The rest of the PM values in Table 5, that have been recently determined by other groups using QSOs, depart from our values by about 2σ (especially in DEC), with ours being the highest PM values and those by Piatek et al. (2008) the lowest and more recent values for the measured PM. The latter values are also in good agreement with other recent determination (except with ours in DEC). A possible explanation for this departure is that, in both previous sets of data, there may be systematic effects still present (despite some of