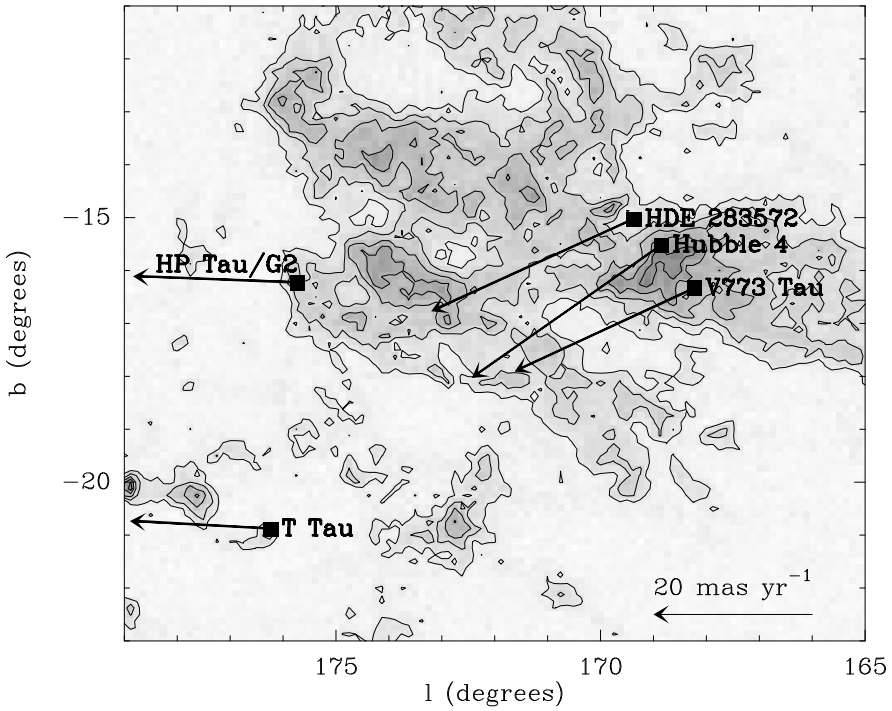

Fig. 2. Image of Taurus in the CO(1-0) line from Dame et al. (2001). The location of the five stars in the complex, and their proper motions are indicated.

tions that the streamers might be 5 to 10 pc nearer than the core. Similarly, Schaefer et al. (2008) found a distance (based on orbit modeling) to the binary young stellar object Haro 1–14c, located in the north-eastern streamer, of 111^{+19}_{-18} pc.

A somewhat puzzling result in that respect comes from the determination by Imai et al. (2007) of the trigonometric parallax of the very young stellar system IRAS 16293–2422 in the eastern streamer L1689. Based on VLBI observations of water masers associated with IRAS 16293–2422, they determine a distance of 178^{+18}_{-37} pc. Since the entire Ophiuchus complex is only about 10 pc across on the plane of the sky, it is very unlikely to be 60 pc deep. Thus, if the distance determination of Imai et al. (2007) were confirmed, it would indicate that at least two unrelated star-forming regions coexist along the line of sight toward Ophiuchus. One region, associated with the core and north-eastern streamers, would be at 120 pc, while the region associated with the eastern cloud L1689 would be several tens of pc farther. It would clearly be very important to obtain an independent confirmation of the distance to L1689.

2.2. *Taurus*

Taurus is perhaps the region that has been most instrumental to the development of our understanding of star-formation (see Kenyon et al. 2008 for a recent review). Its mean distance has long been known to be about 140 pc (Kenyon et al. 1994), and the total extent of the region on the plane of the sky is about 10 degrees (or 25 pc). Roughly speaking, Taurus is composed of three parallel filaments (Figure 2) each about 2 degrees thick. Since those filaments have no reason to be orientated perpendicularly to the line of sight, it is quite conceivable that the near side of each filament might be about 25 pc closer than its far side.

In a series of papers (Loinard et al. 2005, 2007; Torres et al. 2007, 2009, 2011), we have reported measurements of the trigonometric parallax of five young stars distributed across the Taurus complex. Three of these stars (Hubble 4, HDE 283572, and V773 Tau – Figure 2) are located toward the same portion of Taurus, associated with the prominent dark cloud L1495. Interestingly, all three stars are found to be at a similar distance (132.8 ± 0.5 pc, 128.5 ± 0.6 pc, and 132.9 ± 2.4 pc). They also appear to share the same kinematics as measured by their proper motions and radial velocities (Figure 2), and therefore appear to belong to a coherent spatio-kinematical structure. The weighted mean of the three distance measurements (131.4 pc) clearly provides a good estimate of the distance to that specific portion of Taurus. The dispersion about that mean