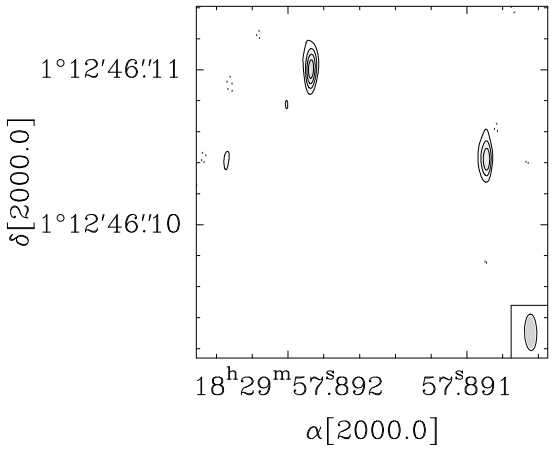

Fig. 1. VLBA image of the EC 95 system on November 29th, 2008. The contour levels are −3, 3, 6, 9, and 12 times 80 μJy beam^{-1}, the rms noise of the image. Data from Dzib et al. (2010).

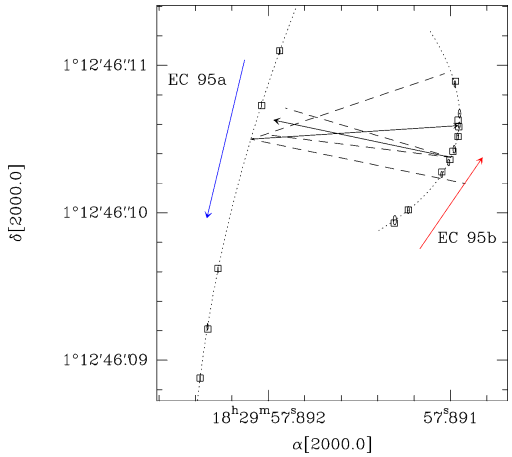

Fig. 2. The positions of EC 95a and EC 95b after removing the parallactic components. The black arrows represents the acceleration of each component from their mean epoch. The blue and red arrow, show the direction of the movement of EC 95a and EC 95b, respectively.

(described in detail in Loinard et al. 2007) was used to calculate the astrometric elements of each component separately. The reference epoch was taken at the mean of the detection for each component: JD 2455078.63≡2009.30 for EC 95a, and JD 2454765.98≡J2008.90 for EC 95b. The best astrometric elements are:

For EC 95a,

$$\begin{aligned}
\alpha_{J2009.3} &= 18^{\rm h}29^{\rm m}57.^{\rm s}892097 \pm 0.000001 \\
\delta_{J2009.3} &= 1°12'46.''10495 \pm 0.00015 \\
\mu_\alpha \cos\delta &= 5.27 \pm 0.03 \text{ mas yr}^{-1} \\
\mu_\delta &= -14.62 \pm 0.33 \text{ mas yr}^{-1} \\
a_\alpha \cos\delta &= -2.76 \pm 0.05 \text{ mas yr}^{-2} \\
a_\delta &= 0.15 \pm 0.62 \text{ mas yr}^{-2} \\
\pi &= 2.33 \pm 0.02 \text{ mas}
\end{aligned}$$

and for EC 95b,

$$\begin{aligned}
\alpha_{J2008.9} &= 18^{\rm h}29^{\rm m}57.^{\rm s}890998 \pm 0.000003 \\
\delta_{J2008.9} &= 1°12'46.''10374 \pm 0.00011 \\
\mu_\alpha \cos\delta &= 1.83 \pm 0.04 \text{ mas yr}^{-1} \\
\mu_\delta &= -3.42 \pm 0.10 \text{ mas yr}^{-1} \\
a_\alpha \cos\delta &= 2.36 \pm 0.06 \text{ mas yr}^{-2} \\
a_\delta &= 0.41 \pm 0.17 \text{ mas yr}^{-2} \\
\pi &= 2.32 \pm 0.05 \text{ mas}
\end{aligned}$$

The corresponding distances are 428.9 ± 2.2 pc, and 429.7 ± 8.7 pc, respectively. Both results are in agreement with a distance $d = 429 \pm 2$ pc for the EC 95 system. This is slightly larger than the distance of 414 ± 5 pc reported in Dzib et al. (2010). The difference is largely the result of a slightly different data calibration scheme, and of the larger number of data points included here.

4. DISCUSSION AND CONCLUSIONS

The distance to EC 95 obtained here is 429 ± 2 pc rather than 414 ± 5 pc, as previously reported. The change is only about 4%, so the conclusions presented by Dzib et al. (2010) are not significantly affected. An interesting result from this new analysis, however, concerns the accelerations. Within the errors, the acceleration of EC 95a and EC 95b appear to be directed in opposite directions (as they should for a Keplerian system) and have similar magnitudes. This suggests that the two components are of similar masses, and might both be intermediate mass protostars. This results needs to be confirmed by additional observations which we expect to perform in the coming years. From the data presented here, one can estimate an orbital period for the system of about 10 years, so the required data should be collected regularly over the coming 5 to 10 years.

S.D., L.L., and L.F.R. acknowledge the financial support of DGAPA, UNAM and CONACyT, Mexico. L.L. acknowledges the Guggenheim foundation for financial support. R.M.T. acknowledges support by the Deutsche Forschungsgemeinschaft (DFG) through the Emmy Noether Research grant VL 61/3-1.NRAO is a facility of the National Science Foundation operated under cooperative agreement by Associated Universities, Inc.

REFERENCES

Dzib, S., et al. 2010, ApJ, 718, 610
Loinard, L., et al. 2007, ApJ, 671, 546
Preibisch, T. 1999, A&A, 345, 583
Torres, R. M., et al. 2007, ApJ, 671, 1813