RevMexAA (Serie de Conferencias), **15**, 136–136 (2003)

THE NATURE OF THE CLUSTER OF RADIO SOURCES IN GGD 14

Y. Gómez,[1] L. F. Rodríguez,[1] and G. Garay[2]

We present sensitive radio continuum observations at 3.6 and 6 cm made simultaneously toward the star-forming region GGD 14. The observations reveal the presence of nine extremely compact ($\leq$ 0.″3) and faint radio sources in a region of $\sim$ 30″ around the bright cometary H II region, VLA 1. Eight of these sources show variability at radio wavelengths, and their spectral indices are characteristically negative. Four of the faint sources have an IR counterpart. We propose that gyrosynchrotron radiation from an active magnetosphere explains the emission from almost all the faint compact sources, suggesting that the GGD 14 region harbors a cluster of low-mass, pre-main-sequence stars. The only sources that do not show time variability are VLA 1, the cometary H II region, and VLA 7, the powering source of the molecular outflow.

Pre-main-sequence stars can be detected by their X-ray emission (Montmerle et al. 2000) or at radio wavelengths by their non-thermal radiation (gyrosynchrotron radiation), which is usually very weak (Rodríguez, Anglada, & Curiel 1999). Figure 1 shows an image of the 3.6 cm and the 6 cm continuum emission observed toward the GGD 14 region. In addition to the cometary H II region, VLA 1, we detected emission from several faint, (with signal-to-noise ratios greater than 5) and compact ($\leq$ 0.″3) radio continuum sources. Four of them were previously reported by Gómez, Rodríguez, & Garay (2000). An extended version of this work can be found in Gómez, Rodríguez, & Garay (2002).

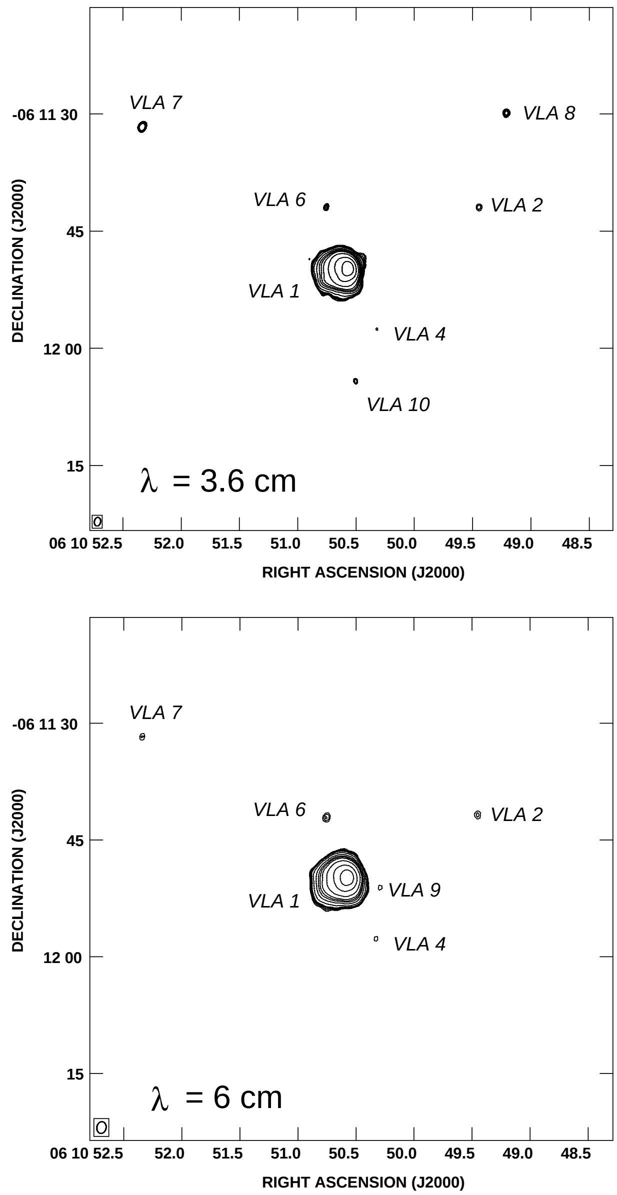

Fig. 1. Continuum contour images of GGD 14 at 3.6 cm and 6 cm. The contours are 5, 6, 7, 8, 9, 15, 30, 50, 70, 100, 200, 500, and 1000 times 12 μJy beam^{-1} and 21 μJy beam^{-1}, respectively.

REFERENCES

Gómez, Y., Rodríguez, L. F., & Garay, G. 2000, ApJ, 531, 861
_________. 2002, ApJ, 571, 901
Montmerle, T., Grosso, N, Tsuboi, Y., & Koyama, K. 2000, ApJ, 532, 1097
Rodríguez, L. F., Anglada, G., & Curiel, S. 1999, ApJS, 125, 427

[1]Instituto de Astronomía, Universidad Nacional Autónoma de México, Campus Morelia, Apartado Postal 3-72, 58090 Morelia, Michoacán, México (y.gomez, l.rodriguez @astrosmo.unam.mx).
[2]Departamento de Astronomía, Universidad de Chile, Casilla 36-D, Santiago, Chile (guido@das.uchile.cl).