RevMexAA (Serie de Conferencias), **40**, 194–194 (2011)

STAR FORMATION AROUND THE SUPERNOVA REMNANT G24.7+0.6

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We identify young stellar object candidates around the supernova remnant G24.7+0.6. They appear located in the molecular gas probably perturbed by the remnant. We suggest that G24.7+0.6 and its progenitor could have triggered the formation of new stars.

G24.7+0.6 (hereafter G24) is a galactic supernova remnant (SNR) whose morphology in the radio band can be described as two incomplete shells and a polarized filled center core with flat spectrum, suggesting to be a pulsar wind nebula driven by an undetected pulsar (Becker & Helfand 1987). This indicates that the progenitor of the supernova was a massive star with a strong stellar wind. The interstellar medium (ISM) around G24 was first studied by Petriella et al. (2008) who discovered the presence of three molecular structures probably interacting with the remnant (Figure 1).

We analyzed the infrared emission around G24 using data extracted from the Galactic Legacy Infrared Mid-Plane Survey Extraordinaire (GLIMPSE) in the four *Spitzer*-IRAC bands of 3.6, 4.5, 5.8, and 8.0 μm. The 8.0 μm image reveals the presence of the massive star G24.73+0.69, classified by Clark et al. (2003) as a luminous blue variable (LBV). This source appears surrounded by an incomplete shell with a bipolar morphology which probably formed from the interaction between the stellar wind of the star and the ISM.

We study star formation activity by identifying young stellar objects (YSOs) candidates. We use the GLIMPSE Point Source Catalog in the *Spitzer*-IRAC bands to construct a [5.8]-[8.0] versus [3.6]-[4.5] color-color (CC) diagram for the sources within a circle of 18′ in radius centered on G24. In the CC diagram we use the photometric criteria of Allen et al. (2004) to classify the sources according to their evolutionary stage. In Figure 1 we show the distribution of the class I YSO candidates (protostars with prominent circumstellar envelopes), superimposed to the molecular emission that is displayed in blue and white contours. The green contours represent the radio continuum emission of G24 at 20 cm.

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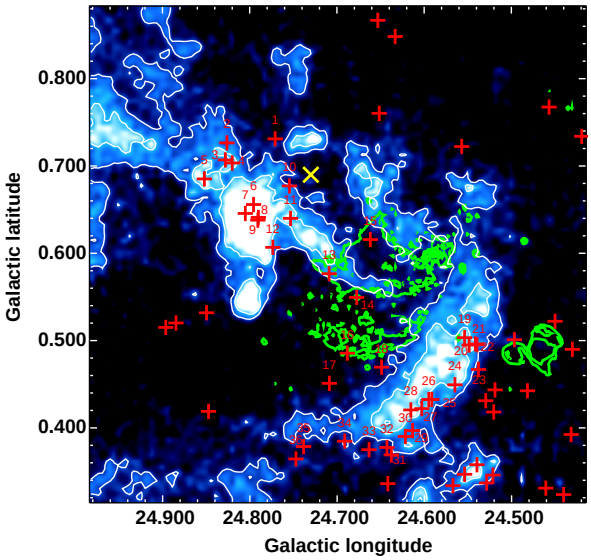

Fig. 1. Emission of the ^{13}CO integrated between 38 and 50 km s^{-1}, with white contours. The green contours are the SNR G24 at 20 cm (obtained from the MAGPIS). The red crosses are the class I YSO candidates. The yellow cross indicate the position of the LBV star G24.73+0.69.

We find many class I YSO candidates in the periphery of the SNR G24.7+0.6 which show a non uniform distribution. A group of them (sources 19 to 36) appears embedded in the molecular cloud perturbed by the SNR, suggesting that the formation of some of these YSOs may have been triggered by G24 and the wind of its progenitor. Another group (sources 2 to 13) is located in the most intense emission of the molecular gas. In this case, the LBV star G24.73+0.69 may have contribute to the formation of these YSOs in combination with the SNR and its progenitor. In summary, the environment of the SNR G24.7+0.6 appears as a favorable scenario of triggered star formation. More observations are required to obtain a complete picture of such activity.

REFERENCES

Allen, L. E., et al. 2004, ApJS, 154, 363
Becker, R., & Helfand, D. 1987, ApJ, 316, 660
Clark, J. S., et al. 2003, A&A, 412, 185
Petriella, A., Paron, S., & Giacani, E. 2008, Bol. Asoc. Arg. Astron., 51, 209