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INTERSTELLAR MEDIUM AROUND SUPERNOVA REMNANTS ASSOCIATED WITH GAMMA-RAY SOURCES

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Supernova remnants (SNRs) are potential sources of gamma-rays, either through inverse Compton scattering of electrons off ambient photons or through the decay of neutral pions created by the collision of energetic protons with dense ambient gas. The SNRs G298.6-0.0 and G298.5-0.3 are proposed to be associated to the gamma-ray sources 3FGL J1214.0-6236 and 3FGL J1212.2-6251, respectively. They are located in a complex portion of the Galactic plane, also containing sources of powerful stellar winds such as the star Wolf Rayet HD104994 and the HII regions G298.559-00.114, G298.868-00.432 and G298.228-00.331 with ongoing star formation.

We present a study of the neutral hydrogen distribution towards the mentioned SNRs. We found a structure with ellipsoidal morphology that encloses a region containing G298.5-0.3, G298.6-0.0, HD104994, G298.559-00.114 and G298.228-00.331. This HI feature is detected in the velocity range 89–100 km s^{-1}. We propose that the neutral gas would be the accelerated portion (which would explain its high radial velocity) of a gas shell swept up by a series of expansive and explosive events. The rest of this shell (at radial velocities compatible with the systemic velocity of the objects) is not visible because of confusion with galactic emission. We also inspected the distribution of the ^{12}CO gas and found a dense molecular cloud at the systemic velocity of $\sim$ 22 km s^{-1} corresponding to the kinematical distance of $\sim$ 10.4 kpc, compatible with the distance to the SNR G298.6-0.0. This molecular cloud is in spatial coincidence, projected in the sky plane, with the very high energy source associated with the remnant. This fact, suggesting a possible hadronic origin for the gamma-rays emission. Regarding to the SNR G298.5-0.3, smaller and fainter than the previous one, the angular resolution of the molecular data is insufficient to draw meaningful conclusions.

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STELLAR ROTATION IN THE σ-ORI CLUSTER

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We conducted measurements of projected rotational velocities in the quite young σ-Ori cluster using 169 spectra with a resolution of 8 km/s, obtained with the Hectoechelle spectograph attached to the 6.5 MMT telescope. The *vsini* obtained values are more precise than those reported so far in the literature. Rotational velocities were determined via the cross-correlation technique using the package FXCOR in IRAF for 60 low mass star members. Our preliminary results confirm the presence of both fast and slow rotators among the sample, being the latter group less massive as suggested by previous studies.

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