

INTERACTION BETWEEN A STELLAR WIND AND THE IONIZED GAS IN N120 (LMC)

A. Laval¹, M. Rosado², J. Boulesteix¹, Y.P. Georgelin¹, M. Marcelin¹, A. Greve³, J. Larsen⁴, A. Viale¹

¹Observatoire de Marseille, France

²Universidad Nacional Autónoma de México, México

³IRAM, Granada, Spain

⁴Sterrewacht Leiden, Holand

The western part of the nebula N120, in the LMC, was observed in H_{α} with the equipment CIGALE at ESO. This equipment consists mainly of a scanning Perot-Fabry interferometer and a two-dimensional photon counting system. The spectral step used here is 0.41 Å over free spectral range of 8.24 Å. The total field of view of $7' \times 7'$ is covered by 256 x 256 pixels (each pixel being there $2.6'' \times 2.6''$).

Inside the intense condensation named N120A which has a diameter of 40'' from deeply exposed H_{α} photographs, violent gaseous motions are detected. The average velocity found over a 32'' circle centered on the knot is 233 km/s, which is close to the value 235 km/s of the diffuse medium in this field. Inside a 8'' circle surrounding the inner star BI141, the line splittings reach values between 65 and 95 km/s and the H_{α} fluxes are lower than in the surroundings. Beyond 8'' from the star the fluxes and the velocities remain constant at 600-800 events/pixel and 235-240 km/s though the line FWHM may be as high as 110 km/s. (The fluxes are just being turned into absolute values using published absolute measures for N120).

No radio emission has been detected at this position, which rules out a origin from an explosion of supernova which ought to be recent to explain the small size of the moving zone. The presence of the inner star suggests an interaction of the gaseous medium with a stellar wind.

Previous photometric observations of the star lead to a spectral type B1-2 Ib which is rather late to explain the observed ionized atomic species. Several observations are necessary now to complete our knowledge of this star; a visible spectrum has already been obtained (it is under reduction) and UV spectrum will be soon available (IUE shift on May 5th 1989). Then the eventual mechanical power due to the star will be compared with the energy injected into the interstellar medium.