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THE SUPERNOVA REMNANT 3C 400.2: KINEMATICS OF ITS IONIZED GAS AND THEORETICAL RESULTS

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3C 400.2 is a supernova remnant (SNR) with a complex morphology consisting of two overlapped shells of different diameters: a large shell at the southeast and a small shell at the northwest. High-resolution radio-continuum observations carried out by Dubner et al. (1994) suggested that this complex morphology could be due to the interaction of two SNRs. However, this view has been challenged by recent studies of the H I distribution around this SNR (Giacani et al. 1998) and by the confrontation of theoretical evolutionary models with the morphology at Hα of this remnant (Velazquez et al. 2001). These recent results suggest that the double shell structure is produced by a single supernova explosion initially expanding into a dense medium encountering a lower density medium and producing a blowout. In this work we present the results of Hα Fabry-Perot observations obtained with the PUMA equipment at the 2.1 m telescope of the Observatorio Astronómico Nacional at San Pedro Mártir, B. C., México. The kinematic results obtained can allow us to distinguish between those possibilities: two supernova explosions or one supernova explosion undergoing a blowout due to a density gradient.

From our observations we have obtained the velocity profiles from the northern region. We have found that the small shell and large shell linewidths are different. Hα profiles are broader in the large shell than in the small shell, the FWHM ranging from 47 to 72 km s^{-1} for the large shell and from 19 to 38 km s^{-1} for the small one. These kinematical results can be explained if we consider a single SN explosion taking place in a dense medium and close to an interface separating this medium from a lower density region. In this picture the SN explosion took place in the small shell.

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REFERENCES

Dubner, G. M., Giacani, E. B., Goss, W. M., & Winkler, P. F. 1994, AJ, 108, 207

Giacani, E. B., Dubner, G., Cappa, C., & Testori, J. 1998, A&AS, 133, 61

Velázquez, P. F., de la Fuente, E., Rosado, M., & Raga, A. C. 2001, A&A, 377, 1136