

ARA OB1: AN HI STUDY OF A VERY YOUNG
SOUTHERN COMPLEX

E.M. Arnal

Instituto Argentino de Radioastronomía
and Observatorio Astronómico La Plata
Argentina

J.C. Cersosimo

Instituto Argentino de Radioastronomía
Argentina

SUMMARY. Ara OB1 is a southern and rather compact stellar association, being its nucleus the open cluster NGC 6193. Herbst and Havlen (1977) suggested that the overall dimensions and structure of the region could be a consequence of a supernova event. In order to look further into this problem, a neutral hydrogen study in the 21-cm line was undertaken using the 30m dish of the Instituto Argentino de Radioastronomía. In this paper we would like to report on the main findings, namely: i) a HI structure expanding at a speed of 10 kms^{-1} , and almost 80 parsecs in diameter has been found in the region; ii) the expanding structure, having a total HI mass of $3.5 \cdot 10^3 M_{\odot}$, has a systemic radial velocity of -12 kms^{-1} (LSR), is younger than $4 \cdot 10^6 \text{ yr}$ and its geometric centroid coincides with the old open cluster NGC 6167; iii) the distances of NGC 6193, $1.3 \pm 0.12 \text{ kpc}$ (Herbst and Havlen, 1977); NGC 6167, $1.4 \pm 0.2 \text{ kpc}$ (Bruck and Smyth, 1967); and the kinematic distance of the HI-expanding feature, $1.2 \pm 0.2 \text{ kpc}$ (this paper), do agree to within the uncertainties; iv) regarding the expanding neutral hydrogen distribution, NGC 6193 is localized at the easternmost edge of the shell. Such region is heavily obscured optically.

Based on the above mentioned evidence the following evolutive scenario for this region is proposed: birth of NGC 6167; energetic phenomena (SN events, strong stellar winds) in its most massive stars; formation of the observed HI expanding structure; interaction of this expanding HI feature with interstellar molecular clouds; formation of NGC 6193 (or Ara OB1).

REFERENCES

Bruck, M.T., Smyth, M.J. 1967, Publ. of the Royal Obs. of Edinburgh, 5, 195.
Herbst, W., Havlen, R.J. 1977, Astr. and Ap. Suppl., 30, 279.

1. Member of the Carrera del Investigador Científico of the Consejo Nacional de Investigaciones Científicas y Técnicas de Argentina.
2. Fellow from the Consejo Nacional de Investigaciones Científicas y Técnicas de Argentina.

Edmundo Marcelo Arnal and Juan Carlos Cersosimo: Instituto Argentino de Radioastronomía, C.C. 5, 1894 Villa Elisa Prov. de Buenos Aires, Argentina.