

**FINAL TECHNICAL REPORT FOR THE LTSA GRANT
NAG 5-3246**

Total Grant Period: 5/1/95 - 4/30/00

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**Title: A Comprehensive Investigation of the
Structuring of the Interstellar Medium of Massive
Stars**

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We proposed to use the IUE, ROSAT, ASCA, and HST archival data, complemented by data obtained from ground-based observatories, to study the physical structure of the interstellar medium as a result of interactions between massive stars and the ambient medium.

During the granting period, we have carried out the major tasks proposed originally and reported the results in a large number of papers. The papers published during the last two years below. We conclude that this program has been highly successfully.

Papers published during the last three years of the granting period:

X-rays from Superbubbles in the Large Magellanic Cloud. V. The HII Complex N11

Mac Low, M.-M., Chang, T.H., Chu, Y.-H., Points, S.D., Smith, R.C., and Wakker, B. 1998, ApJ, 493, 260-273.

Multi-Wavelength View of the Interstellar Medium in the Large Magellanic Cloud

Chu, Y.-H. 1998, PASA, 15, 136-140.

Coronal C⁺ in the Large Magellanic Cloud: Evidence for a Hot Halo

Wakker, B., Howk, J.C., Chu, Y.-H., Bomans, D., and Points, S. 1998, ApJL, 499, L87-L91.

The Multi-Phase Medium in the Interstellar Complex N44

Kim, S., Chu, Y.-H., Staveley-Smith, L., Smith, R.C. 1998, ApJ, 503, 729-743.

ROSAT X-ray Observations of Two Planetary Nebulae: NGC 1535 and NGC 3587

Chu, Y.-H., Gruendl, R.A., and Conway, G.M. 1998, AJ, 116, 1882-1885.

Detection of Pre-Shock Dense Circumstellar Material of SN 1978K

Chu, Y.-H., Caulet, A., Montes, M. J., Panagia, N., Van Dyk, S. D., Weiler, K. W. 1999, ApJ, 512, L51-54.

Physical Structure of Small Wolf-Rayet Ring Nebulae

Chu, Y.-H., Weis, K., Garnett, D. R. 1999, AJ, 117, 1433-1440.

SNRs in the Magellanic Clouds II: SNR Breakouts from N11L and N86

Williams, R.M., Chu, Y.-H., Dickel, J.R., Smith, R.C., Milne, D.K., Winkler, P.F 1999, ApJ, 514, 798-817.

Supernova Remnants in the Magellanic Clouds III: An X-ray Atlas of LMC Supernova Remnants

Williams, R. M., Chu, Y.-H., Dickel, J. R., Petre, R., Smith, R. C., Tavarez, M. 1999, ApJS, 123, 467-485.

The Supergiant Shell LMC2: I. Kinematics and Physical Conditions

Points, S.D., Chu, Y.-H., Kim, S., Smith, R.C., Snowden, S.L., Brandner, W., Gruendl, R.A. 1999, ApJ, 518, 298-323.

Morphology and Physical Structure of the Interstellar Medium

Chu, Y.-H. 1999, Ap&SS, 269, 441-458.

HST WFPC2 Imaging of Shocks in Superbubbles

Chen, C.-H., R., Chu, Y.-H., Gruendl, R.A., Points, S.D. 2000, AJ, 1317-1324.

RXJ050736-6847.8: A Large Supernova Remnant around an X-ray Binary in the Large Magellanic Cloud

Chu, Y.-H., Kim, S., Points, S.D., Petre, R., Snowden, S.L. 2000, AJ, 119, 2242-2247.

Hot Gas in the Large Magellanic Cloud

Chu, Y.-H. 2000, Revista Mexicana de Astronomía y Astrofísica (Conference Series), Vol. 9, pp. 262-269. [invited]

A Morphological Diagnostic for Dynamical Evolution of Wolf-Rayet Bubbles

Gruendl, R.A., Chu, Y.-H., Dunne, B.C., Points, S.D. 2000, AJ, 120, 2670-2678.

An Observer's View of the Multi-Phase ISM: Interactions and Evolution

Chu, Y.-H. 2000, in Stars, Gas and Dust in Galaxies: Exploring the Links, ASP Conf. Ser., pp.31-36 in press. [invited]

The Supergiant Shell LMC2: II. Physical Properties of the 10^6 K Gas

Points, S.D., Chu, Y.-H., Snowden, S.L., Staveley-Smith, L. 2000, ApJ, 545, 827-841.