

CO Mapping of Spiral Galaxies in the Ursa Major Cluster: An Atlas

Myung-Hyun Rhee & Aeree Chung

Center for Space Astrophysics & Department of Astronomy, Yonsei University, Seoul 120-749, Korea

Marc Verheijen & Min S. Yun

NRAO, P.O. BOX 0, Socorro, NM 87801, USA

Abstract. We present the first results of the OTF CO (J=1-0) mapping of spiral galaxies in the Ursa Major cluster, obtained with the NRAO 12m radio telescope during June 20-27, 1999 and March 23-30, 2000.

1. Observations

The properties of molecular gas in spiral galaxies is the subject of a wide field of research (e.g. Young & Scoville 1991 and references therein) and much has been done on the global scale of galaxies. The advent and maturity of the On-The-Fly (OTF) mapping technique at the NRAO 12m radio telescope now affords us with a way to address many issues on the more local scales within a large number of nearby spiral disks that are many arc minutes in diameter. We start a project which aims at OTF mapping of the distribution of $^{12}\text{CO}(J=1-0)$ emission in spiral galaxies in the Ursa Major cluster and compare in detail the distributions of the molecular gas to that of the neutral hydrogen as a function of the morphological type, surface brightness, dust content and temperature and the star formation threshold of a galaxy's disk.

We have obtained OTF CO (J=1-0) maps with the NRAO 12 m telescope at Kitt Peak from two observational runs during June 20-27, 1999 and March 23-30, 2000. Among 23 galaxies observed, the CO emissions have been detected for 21 galaxies. Data reduction and analysis have been completed (Chung 2000). An example from the CO atlas is presented in Figure 1.

References

- Chung, A. 2000, Masters' Thesis, Yonsei University
Young, J. S. & Scoville, N. Z. 1991, *ARA&A* 29, 581

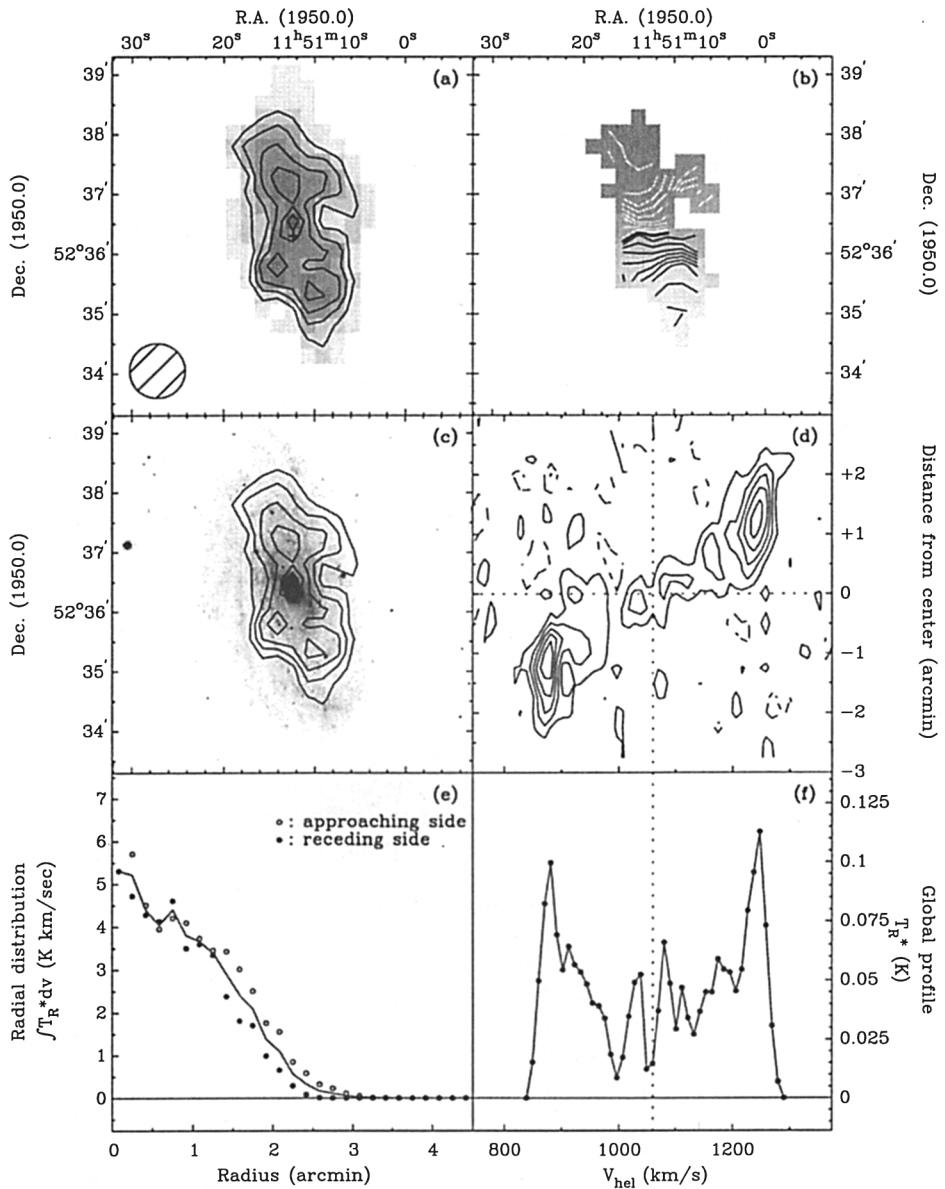


Figure 1. CO atlas of NGC 3953. (a) Integrated CO map. (b) Velocity field diagram. (c) CO contours overlaid on B-band image. (d) Position-velocity diagram. (e) Radial distribution. (f) Global profile.