

CO EMISSION ALONG THE ANOMALOUS ARMS OF NGC 4258

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The spiral galaxy NGC 4258 is known for its anomalous H α and nonthermal radio arms perpendicular to the normal spiral arms (van der Kruit et al., 1972). Several models have been proposed to explain this phenomenon and its origin is most probably to be sought in the past activity of the nucleus of NGC 4258. Most of the characteristics of the anomalous arms, such as the symmetry with respect to the center, or the properties of the emission lines (pure H α line emission with no continuum, line ratio between H α and [NII]) are reminiscent of the optical and radio jets currently observed in active galaxies.

During a recent observing run with the IRAM 30-meter telescope, CO emission has been detected in the central region and *along* the anomalous arms of NGC 4258 up to distances of about 2 kpc from the center (see Krause et al., 1990). Cuts perpendicular to the anomalous arms show that the CO is concentrated along the H α emission. At distances greater than 2 kpc, no CO is detected neither along the extensions of the optical structures nor further out along the radio ridges. The molecular mass associated with each anomalous arm is estimated to about $3 \cdot 10^8 M_{\odot}$.

The strong concentration of the molecular gas in the inner parts of the H α arms and the high associated H $_2$ mass are facts which are not expected by any existing model. Relatively nearby, NGC 4258 remains a unique opportunity to investigate the interaction of a jet-like phenomenon with both the atomic and neutral gas of the galactic disk.

REFERENCES

- Krause, M., Cox, P., Garcia-Barreto, J.A., Downes, D.: 1990, *Astron. Astrophys.* **233**, L1
van der Kruit, P.C., Oort, J.H., Mathewson, D.S.: 1972, *Astron. Astrophys.* **21**, 169