

Summary of Some Observations of Peculiar Red Giants With the IRAM 30M Radiotelescope

A. Omont, S. Guilloteau, R. Lucas, J.J. Benayoun, J. Cernicharo
E. Nercessian

Observatoire de Grenoble, Universite Joseph Fourier

M. Jura M. Morris

UCLA

P.F. Goldsmith D.C.Lis

FCRAO University of Massachussets

Nguyen-Q-Rieu - Observatoire de Paris-Meudon

We present a brief description of the main results obtained on the following topics: (1) Sulfur-bearing molecules in O-rich envelopes: SO₂ (104 and 160 GHz), H₂S (169 and 217 GHz) in 15 stars, SO (86 GHz) in 7 stars (all new detections except H₂S in OH231.8+4.2). Excitation temperatures and line profiles could suggest in some stars a main contribution from external layers for SO₂ and internal layers for H₂S.

(2) HCN in 7 O-rich envelopes. (3) HCO⁺ in six envelopes (NGC 7027, CRL 618, IRAS 21282+5050, OH 231.8+4.2, CIT 6, VY Cma). (4) Observations of 7 new molecules (SO₂, SO, CS, HNC, NH₃, HCO⁺, OCS) and of a rapid molecular outflow ($v \approx 100$ m/s) in OH 231.1+4.2. (5) Discovery of the second strong millimeter-wave maser: HCN (0,2,0, J = 1-0) in CIT 6 (where it is strongly polarized) and in 5 other similar C-rich envelopes. (6) Measurements of large ¹³CO/¹²CO ratios in envelopes of 13 C-rich stars. In analysing these data, we show that the temperature profiles generally used for modeling the circumstellar envelopes can be quite wrong for small and very large mass-loss rates.

References

- Lucas R., Omont A., Guilloteau, S., Nguyen-Q-Rieu 1986, Astron. Astrophys. Letters, 154, L12.
Guilloteau, S., Lucas, R., Nguyen-Q-Rieu, Omont, A. 1986, Astron. Astrophys. Letters, 165, L1.
Omont, A., Lucas, R., Guilloteau, S., Morris, M., Cernicharo, J. 1988, in preparation.
- Nercessian, E., Guilloteau, S., Omont, A., Benayoun, J.J. 1988, Astron. Astrophys. in press.
- Guilloteau, S., Omont, A., Lucas, R. 1988, in preparation.
- Morris, M., Guilloteau, S., Lucas, R., Omont, A. 1987, Astrophys. J. 321, 888.
- Guilloteau, S., Omont, A., Lucas, R. 1987, Astron. Astrophys. 176, L24.
Lucas, R., Guilloteau, S., Omont, A. 1988, Astron. Astrophys. 194, 230.
Goldsmith, P.F., Lis, D.C., Omont, A., Guilloteau, S., Lucas, R. 1988, Astrophys. J. in press.
- Jura, M., Kahane, C., Omont, A. 1988, Astron. Astrophys. in press.