

## An upper limit to the molecular density in IC 342

E. Serabyn  
*Division of Physics, Mathematics and Astronomy*  
*California Institute of Technology, 320-47*  
*Pasadena, CA 91125*

R. Güsten  
*Max-Planck-Institut für Radioastronomie*  
*Auf dem Hügel 69, 5300 Bonn 1, FRG*

A search for CS J=7-6 emission from the core of the galaxy IC342 was undertaken with the Caltech Submillimeter Observatory. At the line frequency of 342.883 GHz, the beamsize is 20". An upper limit to  $T_{\text{MB}}\Delta v$  of 0.4 K km s<sup>-1</sup> was obtained. This upper limit can be compared directly to the CS J=3-2 integrated line flux (3.1 K km s<sup>-1</sup>; Mauersberger and Henkel 1989), because the beam used for that observation was similar (17"). The J=7-6 to J=3-2 line ratio limit is 0.13 with no correction for the slight difference in beamsize, and  $\approx$  0.15 with this correction included. Assuming  $T_{\text{kin}} = 70$  K (Martin and Ho 1986), this leads to a density upper limit of about  $5 \times 10^5$  cm<sup>-3</sup> for this gas.

### References:

- Mauersberger, R. and Henkel, C.: 1989, *Astron. Astrophys.*, **223**, 79.  
Martin, R.N. and Ho, P.T.P.: 1986, *Astrophys. J.*, **308**, L7.