MOLECULAR LINE SURVEY OF DARK CLOUDS

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(Manuscript not Received)

DISCUSSION

WOOTTEN: I noticed the DC_3N spectrum, but you did not quote a number for HC_3N/DC_3N. Published results, which assumed a low optical depth for the HC_3N line yield HC_3N/DC_3N ratios several times lower than either the HC_3N/DC_3N or HCN/DCN ratio. Using your ^{13}C results, can you give me an accurate number for HC_3N/DC_3N in TMC-1?
SUZUKI: [HCCCN] / [DCCCN] ~65 (± 30%).

AVERY: I think these are very interesting results and I will like to commend you for them. I am somewhat disappointed that there are only two U-lines in this large sweep of frequency space, but if you went deeper, you may find some more. You mentioned that in one source U45379 line appears in absorption. I did not catch in what source was that?
SUZUKI: Sgr B2.

OMONT: What is the meaning of the sensitivity limit you give for your survey?
SUZUKI: The sensitivity of unbiased survey is about ~0.5K (in antenna temperature of AOS - high), except for some frequency ranges observed in bad conditions. As shown in Figure 1, the limit varies from frequency to frequency.
P.A. FELDMAN: I know that the Nobeyama limit of frequency resolution is 35-40 kHz, but I wonder if you know of any attempt at other observatories to detect possible hyperfine splitting of U45379 in regions of TMC-1 with the narrowest line widths?
SUZUKI: No, but I don't think the frequency resolution of 38 kHz is enough to resolve the velocity profiles in TMC-1. We will observe

M. S. Vardya and S. P. Tarafdar (eds.), Astrochemistry, 199–200.

U45379 with FX (digital autocorrelator), which has been developed at NRO.

GUELIN: Was it necessary to use a large telescope for a line survey in TMC-1? The observed displacement of the emission peak of different molecules (i.e. NH_3 vs HC_5N, also HC_3N vs HC_5N) could bias your survey?
SUZUKI: We mapped TMC-1 with C_4H, NC_3N, HC_5N and U45379. The data show several small components whose sizes are comparable to the beam size (~40 arcsec). The cyanopolyyne peak overlaps one of them where C_4H (N = 4-3) and HC_5N (J = 4-3) show their strongest peak. The signal would dilute with a smaller telescope. I think it is worthwhile to use a large telescope for line surveys in TMC-1.

IRVINE: How do the abundance values which you obtain compare with those derived from Onsala spectral survey and the Caltech spectral survey?
SUZUKI: The abundance we derive are for each velocity component, whereas Onsala and Caltech spectral survey values refer to total abundance. However, comparison shows that our values are consistent with the others, within uncertainty.

https://doi.org/10.1017/S0074180900154026 Published online by Cambridge University Press