Malcolm Walmsley
1941–2017

Beginnings

University of Dublin Trinity College

Coláiste na Tríonóide

College of the University of Dublin

UNIVERSITY OF CALIFORNIA
LET THERE BE LIGHT
SAN DIEGO

Some Problems in the Theory of Radio Sources and Planetary Nebulae

A dissertation submitted in partial satisfaction of the requirements for the degree Doctor of Philosophy in Physics

by

Charles Malcolm Walmsley

Committee in charge:

Professor Geoffrey R. Burbidge, Chairman
Professor Robert J. Gould
Professor William G. Mathews
Professor Marshall H. Cohen
Professor George E. Backus

1969

THE ASTROPHYSICAL JOURNAL, Vol. 155, January 1969

First paper

LYMAN-LINE DECREMENTS IN LOW-DENSITY PLANETARY NEBULAE

C. M. WALMSLEY AND W. G. MATHEWS
Department of Physics, University of California, San Diego
Received May 13, 1968

Astron. & Astrophys. 11, 65—69 (1971)

First radio astronomy paper

On the Interpretation of the Pulsar Dispersion Measure

MICHAEL GREWING and MALCOLM WALMSLEY
Max-Planck-Institut für Radioastronomie, Bonn
and
Institut für Astrophysik und Extraterrestrische Forschung, Bonn

Received September 28, revised November 9, 1970

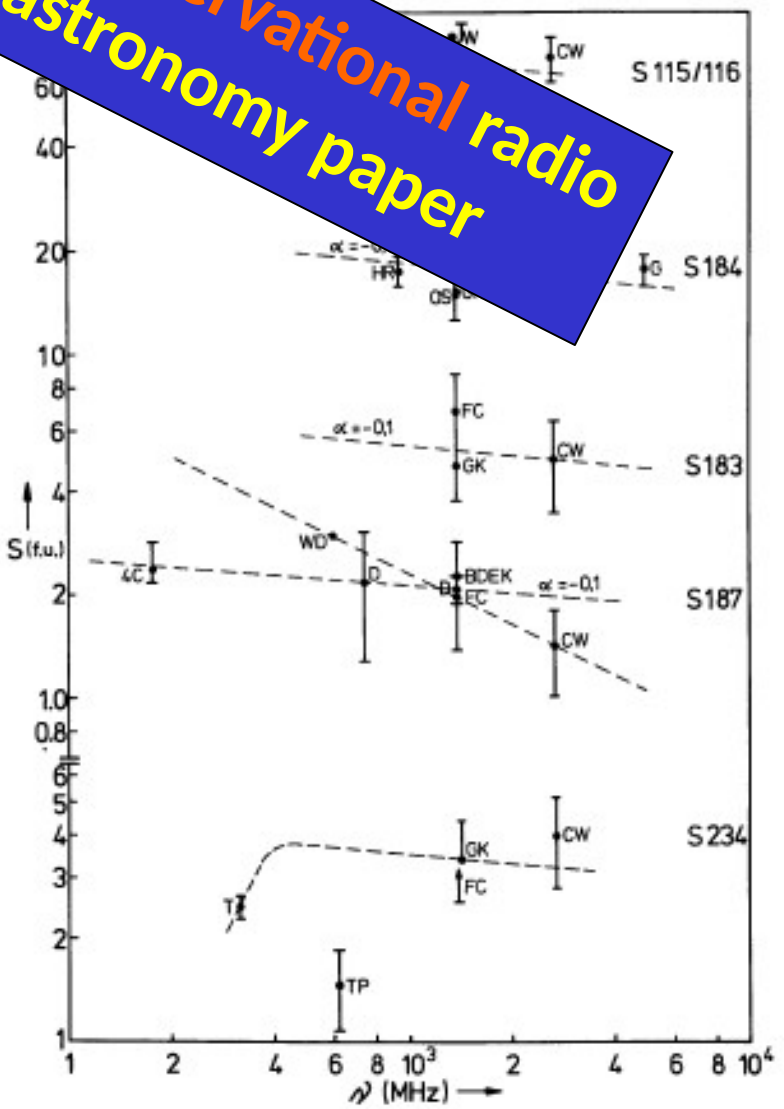
Astron. & Astrophys. 23, 117—124 (1973)

Observations of Optical Nebulae at 2695 M

E. Churchwell and C. M. Walmsley
Max-Planck-Institut für Radioastronomie, Bonn

First observational radio astronomy paper

Stockert 25m (18‘ FWHM)



Astron. & Astrophys. 41, 121 – 132 (1975)

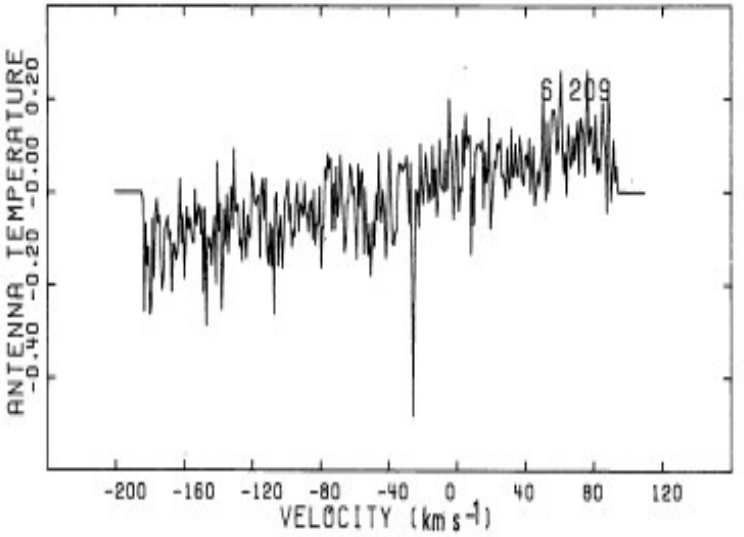
A Study of the Nebulae S 206 and S 209

C. M. Walmsley and E. Churchwell
Max-Planck-Institut für Radioastronomie, Bonn

I. Kazès and A. M. Le Squéren
Observatoire de Paris, Meudon

Fig. 2b. 10.7 GHz map of S 209. HPBW = 1.3 arcmin

First Effelsberg & first molecular line paper



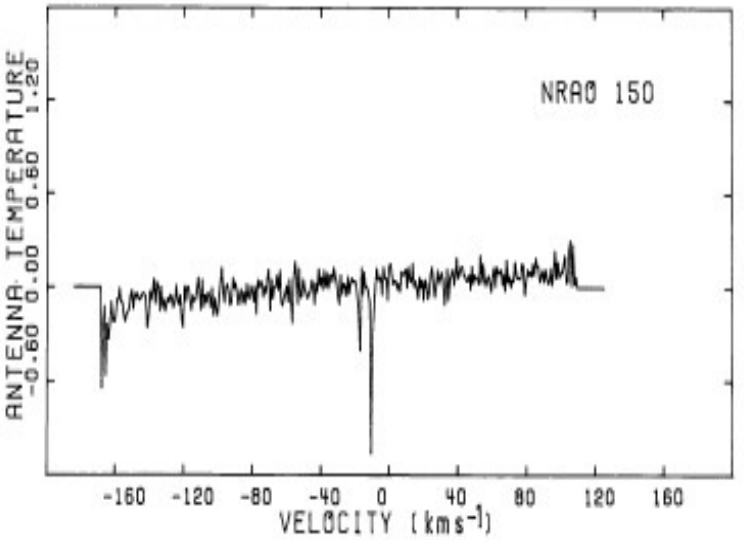


Fig. 4. H_2CO ($1_{10}-1_{11}$ transition at ν=4829.66 MHz) spectrum against S 206, S 209 and NRAO 150

Astron. & Astrophys. 25, 129–135 (1973)

Thermal and Ionization Equilibrium in a Dense Hydrogen Cloud

Malcolm Walmsley
Max-Planck-Institut für Radioastronomie, Bonn

First astrochemistry paper

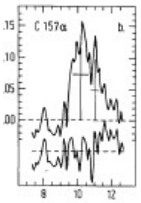
CI/CII regions

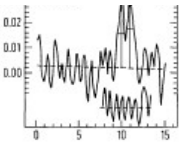
Astron. & Astrophys. 35, 49—56 (1974)

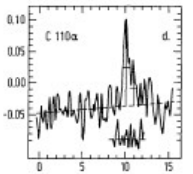
The Frequency Dependence of the Carbon Recombination Line

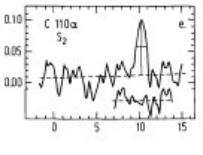
D. Hoang-Binh
Observatoire de Paris, Meudon, and Max-Planck-Institut für Radioastronomie, Bonn

C. M. Walmsley
Max-Planck-Institut für Radioastronomie, Bonn









An electron density of $10\,cm^{-3}$ and a kinetic temperature of 100 K are the approximate parameters of the best fitting models.

THE ASTROPHYSICAL JOURNAL, 291:722–746, 1985 April 15

PHOTODISSOCIATION REGIONS. I. BASIC MODEL

A. G. G. M. TIELENS AND DAVID HOLLENBACH
NASA/Ames Research Center, Moffett Field, California

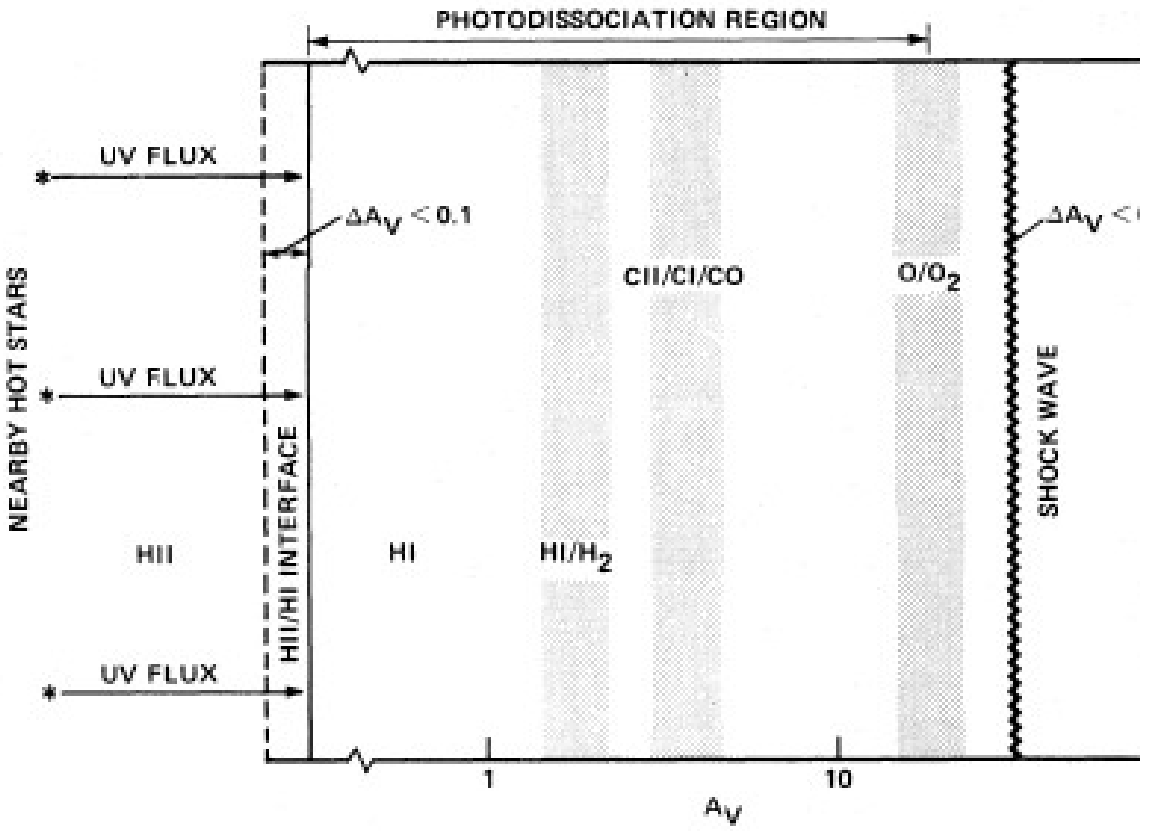


TABLE 2

STANDARD MODEL PARAMETERS

Parameter	Standard Model
n_0 (cm^{-3})	2.3(5)
G_0	1.0(5)
δv_d (km s^{-1})	2.7
$\mathscr{A}_C$	3.0(−4)
$\mathscr{A}_O$	5.0(−4)
$\mathscr{A}_{Si}$	7.9(−7)
$\mathscr{A}_S$	7.9(−6)
$\mathscr{A}_{Fe}$	2.5(−7)
$\mathscr{A}_{Mg}$	1.3(−6)
F_{IR} (ergs cm^{-2} s^{-1})	5.0(2)
T_0 (K)	75
$\tau_{100\ \mu m}$	3.0(−1)
δ_d	1.0
δ_{uv}	1.8
k_{uv}	1.8
Y	1.0(−1)
E_d (eV)	6.0

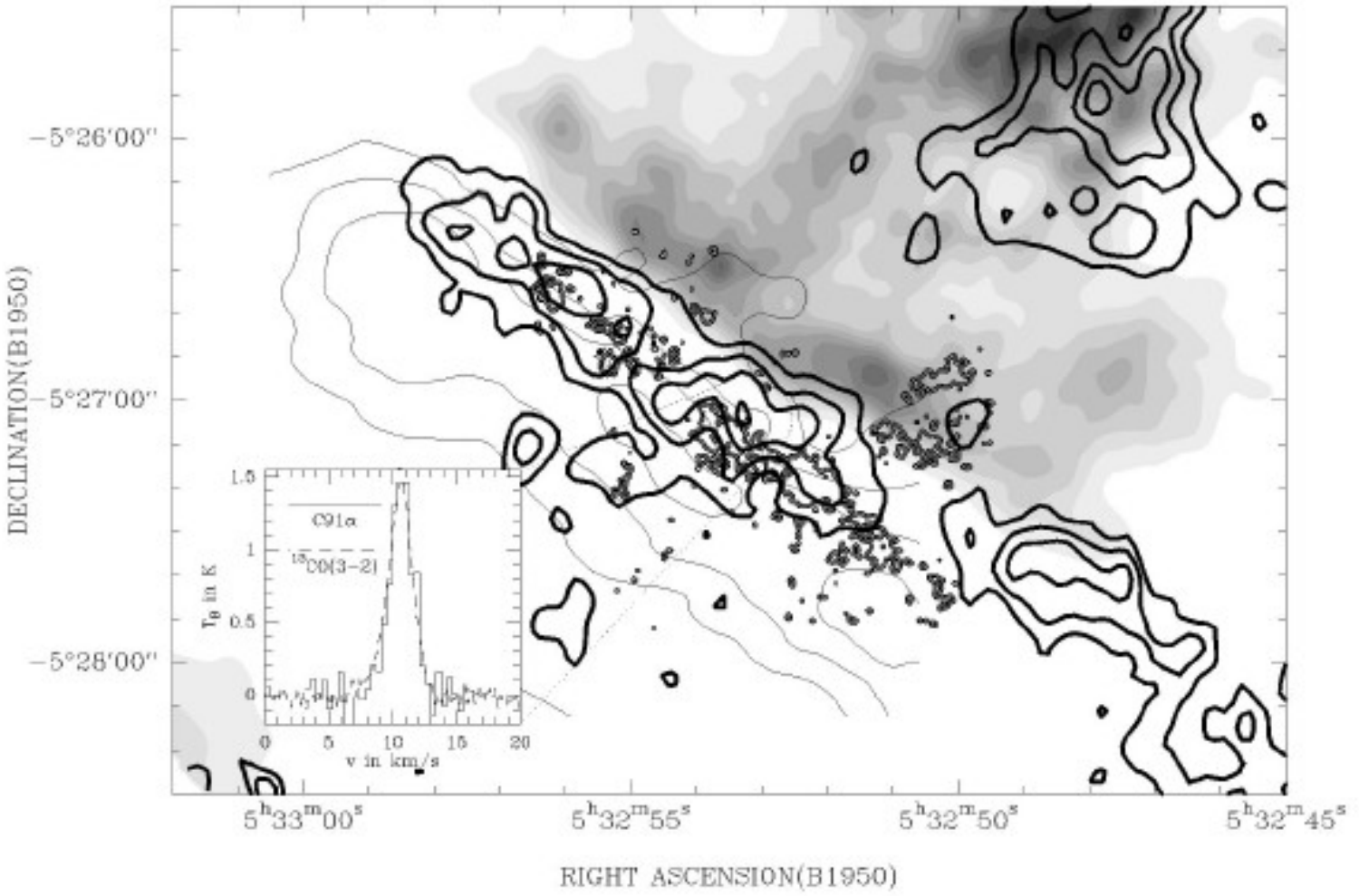
NOTE.—Numbers in parentheses: 2.3(5) = 2.3 × 10^5.

THE ASTROPHYSICAL JOURNAL, 487:L171–L174, 1997 C

25 years after his first CRRL work

CARBON RADIO RECOMBINATION LINES IN THE ORION BAR

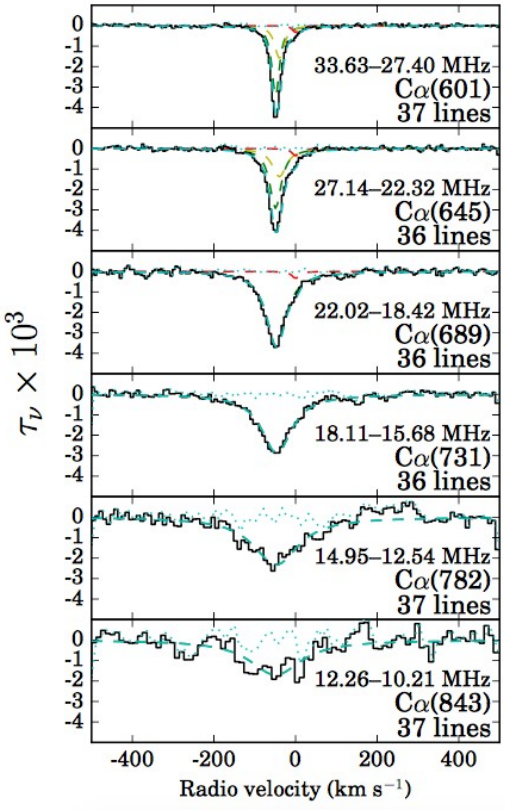
F. WYROWSKI,[1] P. SCHILKE,[1,2] P. HOFNER,[3] AND C. M. WALMSLEY[4]



THE ASTROPHYSICAL JOURNAL, 260:317–325, 1982 September 1

THE INFLUENCE OF DIELECTRONIC-LIKE RECOMBINATION AT LOW TEMPERATURES ON THE INTERPRETATION OF INTERSTELLAR, RADIO RECOMBINATION LINES OF CARBON

C. M. WALMSLEY
Max-Planck-Institut für Radioastronomie, and Department of Physics, University of Illinois at Urbana-Champaign
AND
W. D. WATSON



Salas+ 2017

Astron. Astrophys. 67, 139—147 (1978)

TMC-1

ASTRONOMY AND ASTROPHYSICS

First NH_3 paper

First ever TMC-1 paper

Molecular Observations of a Possible Proto-Solar N… in a Dark Cloud in Taurus

E. Churchwell*, G. Winnewisser and C. M. Walmsley
Max-Planck-Institut für Radioastronomie, Auf dem Hügel 69, D-5300 Bonn, Federal Republic of Germany

Received October 20, 1977

Summary. We have detected in TMC 1 (Taurus Molecular Cloud 1), a small molecular condensation located near the south eastern edge of Heiles' cloud 2, strong emission from the $J=9-8$ transition of HC_5N and the $J=1-0$ transition of HC_3N. In addition we report measurements of the $2_{11}-2_{12}$ transition of H_2CO in absorption, and the $J, K=1,1$ transition of NH_3 in emission as well as OH observations. All molecular transitions have a linewidth of $\Delta v \sim 0.5$ km s^{-1}. A detailed map of the $J=9-8$ transition of HC_5N indicates that TMC 1 is elliptical in shape with linear dimensions $>0.15 \times 0.06$ pc. There is little velocity dispersion throughout the cloud ($\lesssim 0.2$ km s^{-1}), which has a density of $\sim 3\,10^4$ cm^{-3} and a mass of about 1 $M_\odot$. The rotation period of TMC 1 is at least $2\,10^6$ yr and it is probably an example of star formation on a small scale.

of the $J=4-3$ transition of HC_5N by MacLeod et al. (1978) and the $J=9-8$ transition of HC_7N by Kroto et al. (1977). Although the angular size of Cloud 2 is in excess of 1°.5, the area where the more complex molecules have so far been found is a small condensation located near the south-eastern edge of Cloud 2, in an opaque region centered near $\alpha = 4^h\,38^m\,38^s$, $\delta = 25°\,36'\,00''$. In the following, we will refer to this small cloud as the Taurus Molecular Cloud 1, or TMC 1. We report in TMC 1 the detection and partial mapping of the $J=9-8$ transition of HC_5N at 23.96 GHz, the detection of the $J=1-0$ transition of HC_3N near 9.1 GHz, and observations of the 2 cm H_2CO $2_{11}-2_{12}$ K-doublet transition and the two main 18 cm transitions of OH.

II. Summary of Cloud 2 Properties

TMC-1

Olano, Walmsley, & Wilson 1988

"Ammonia Peak"

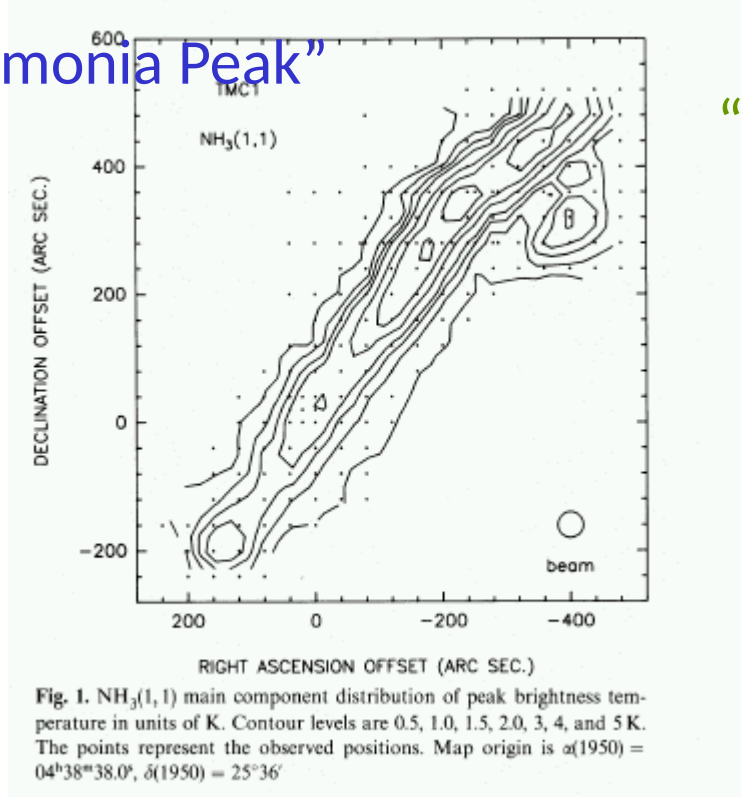


Fig. 1. $NH_3(1,1)$ main component distribution of peak brightness temperature in units of K. Contour levels are 0.5, 1.0, 1.5, 2.0, 3, 4, and 5 K. The points represent the observed positions. Map origin is $\alpha(1950) = 04^h38^m38.0^s$, $\delta(1950) = 25°36'$

"Cyanopolyyene Peak"

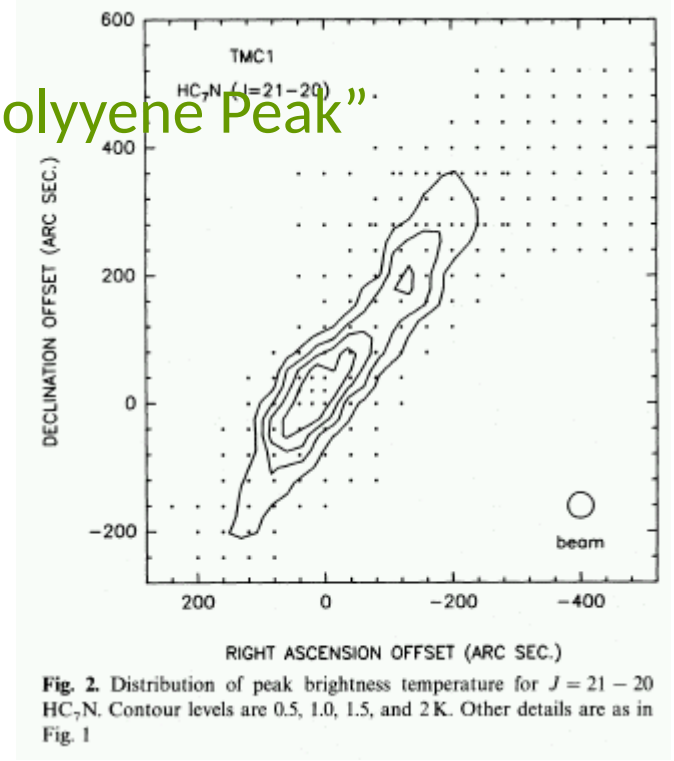
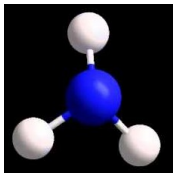
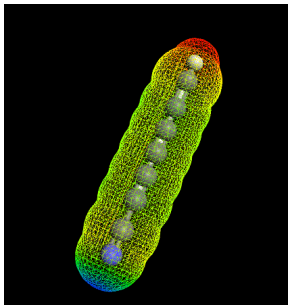
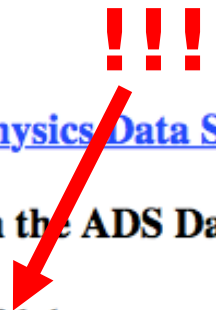


Fig. 2. Distribution of peak brightness temperature for $J = 21 - 20$ HC_7N. Contour levels are 0.5, 1.0, 1.5, and 2 K. Other details are as in Fig. 1

Churchwell, Winnewisser, & Walmsley 1978







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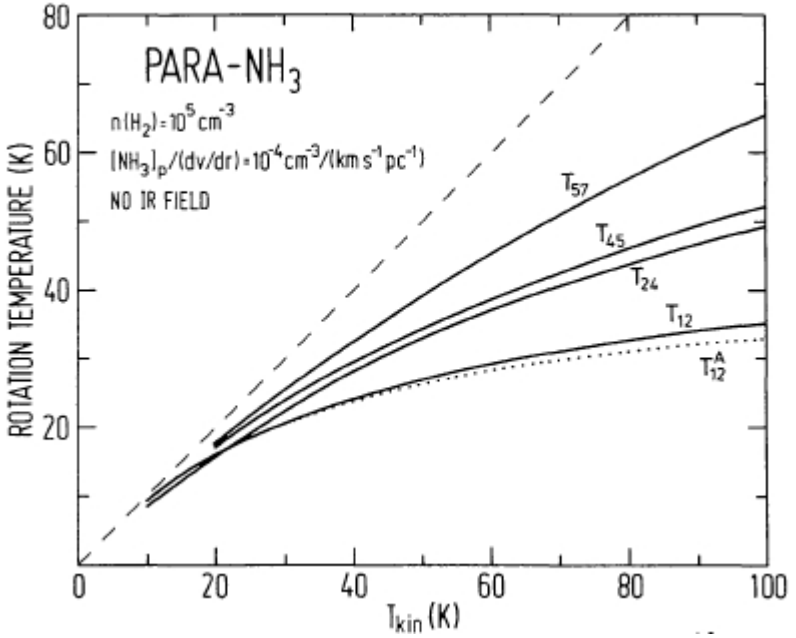
1	1978A&A....67..139C Churchwell, E.; Winnewisser, G.; Walmsley, C. M.	0.502	06/1978	A F G R C S U	Molecular observations of a possible proto-solar nebula in a dark cloud in Taurus
2	1978ApJ...225L.139L Langer, W. D.; Wilson, R. W.; Henry, P. S.; Guelin, M.	0.502	11/1978	A F G R C	Observations of anomalous intensities in the lines of the HCO/plus/ isotopes
3	1980BAAS...12..485F Fox, K.; Jennings, D. E.	0.497	03/1980	F G	Observations of HC_5N at 18.6, 21.3, 24.0, and 26.6 GHz in Sgr B2, TMC-1, and IRC+10216
4	1980ApJ...242..541K Kutner, M. L.; Machnik, D. E.; Tucker, K. D.; Dickman, R. L.	0.497	12/1980	A F G R C S	Search for interstellar pyrrole and furan
5	1980ApJ...242L..87B Benson, P. J.; Myers, P. C.	0.497	12/1980	A F G R C S O	Detection of HC5N in four dark clouds
6	1981MNRAS.194...15P Phillips, J. P.; White, G. J.	0.497	01/1981	A E F G R C	CO observations of the dark clouds Heiles 2, L1333, L1778 and L129

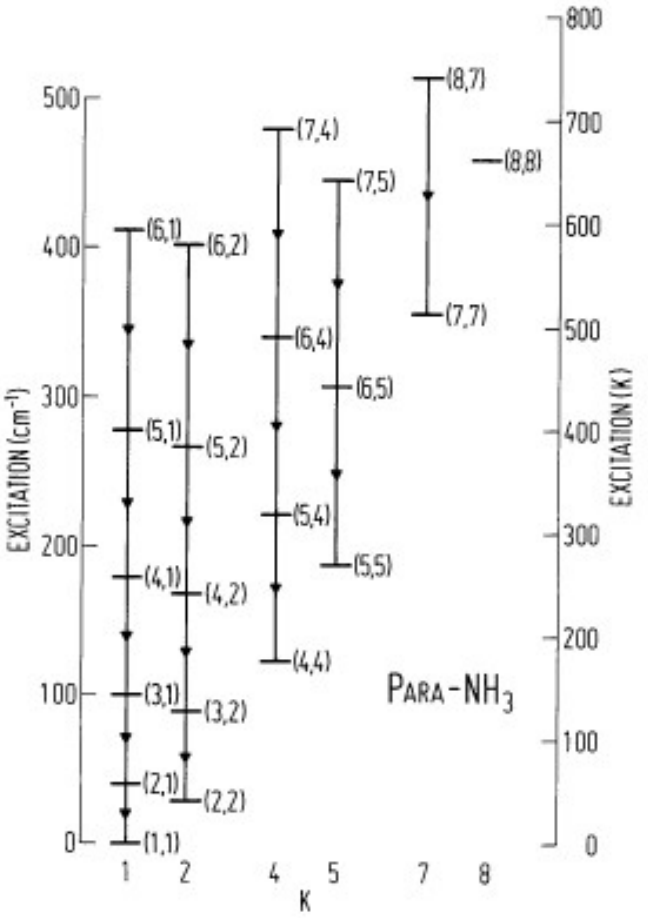
Astron. Astrophys. 122, 164–170 (1983)

Ammonia as a molecular cloud thermometer

C. M. Walmsley[1] and H. Ungerechts[2]

[1] Max-Planck-Institut für Radioastronomie, Auf dem Hügel 69, D-5300 Bonn 1, Federal Republic of G
[2] I. Physikalisches Institut der Universität Köln, Zülpicher Strasse 77, D-5000 Köln, Federal Republic o





Mon. Not. R. astr. Soc. (1988) **235**, 229–238

A recalibration of the interstellar ammonia thermometer

G. Danby *Department of Physics and Astronomy, University College, Gower Street, London WC1E 6BT, UK*

D. R. Flower *Physics Department, The University, Durham DH1 3LE, UK*

P. Valiron *Groupe d'Astrophysique, CERMO, BP 68, F-38402 St Martin d'Hères, France*

P. Schilke and C. M. Walmsley *Max-Planck-Institut für Radioastronomie, Auf dem Hügel 69, D-5300 Bonn 1, FRG*

Astron. Astrophys. 66, 431—435 (1978)

Detection of the $^2\Pi_{3/2}$, $J = 9/2$ Λ-Doublet Line of OH

A. Winnberg, C. M. Walmsley and E. Churchwell

Max-Planck-Institut für Radioastronomie, Auf dem Hügel 69, D-5300 Bo

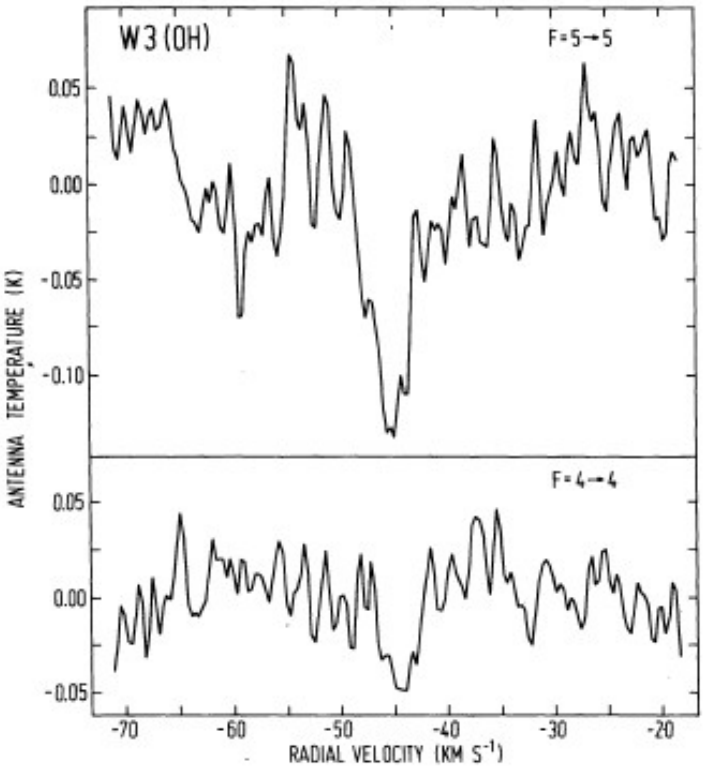
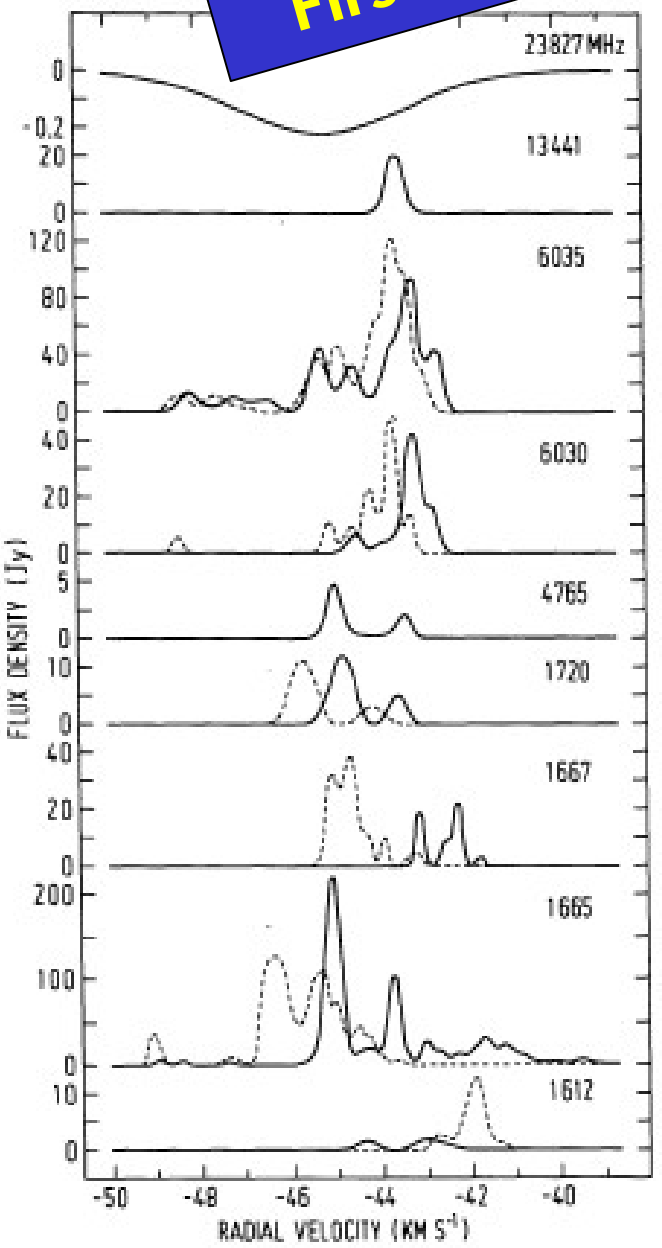


Fig. 1. The $^2\Pi_{3/2}$, $J = 9/2$, $F = 5$–5 and $F = 4$–4 OH Λ-doublet lines observed toward W3(OH). The radial velocity is relative to L.S.R. Baseline fits have been subtracted (see Section 3)

First OH paper



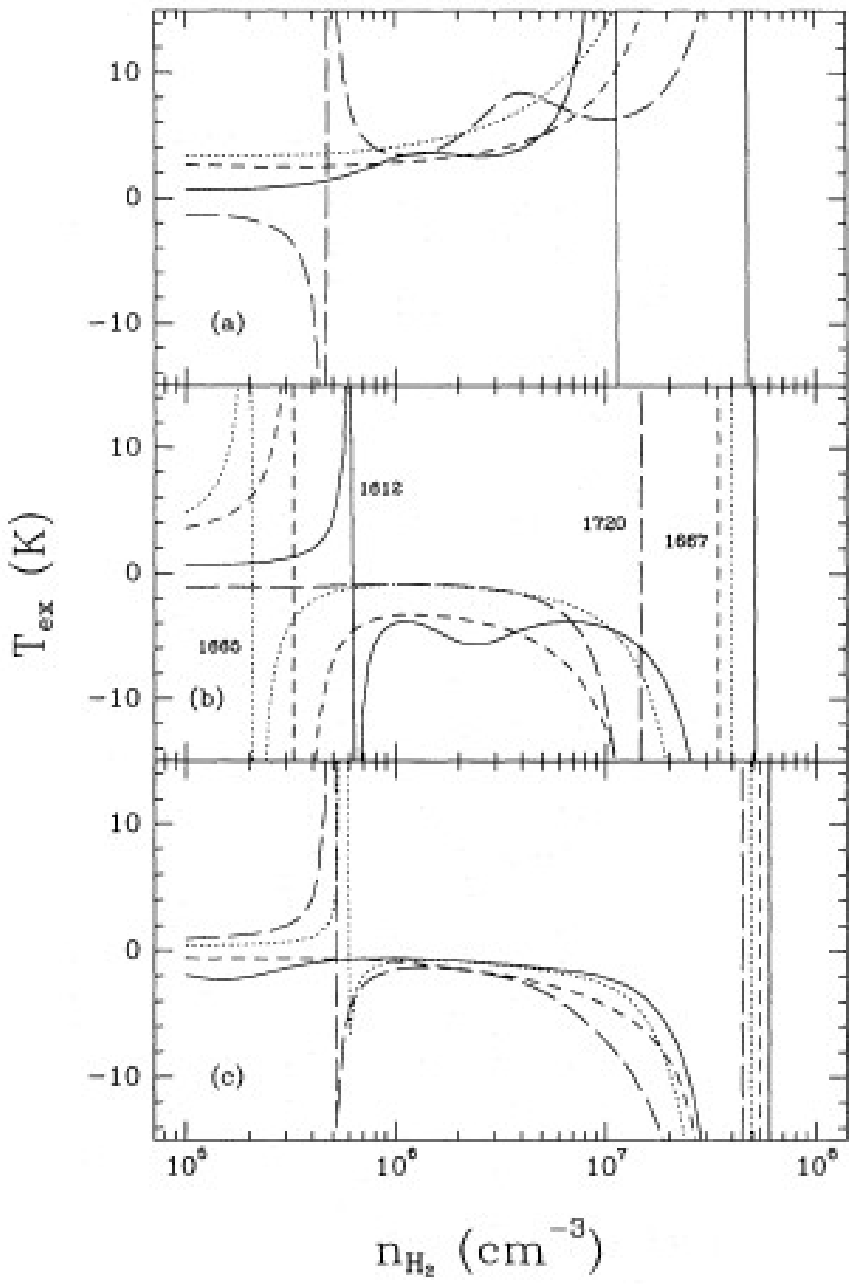
+ Baudry, Guilloteau, Walmsley, Wilson, Winnberg, …

Astron. Astrophys. 241, 537–550 (1991)

OH maser models revisited

R. Cesaroni and C.M. Walmsley

Max-Planck-Institut für Radioastronomie, Auf dem Hügel 6



no overlap

local overlap

local and non-local overlap

First CH_3OH maser paper

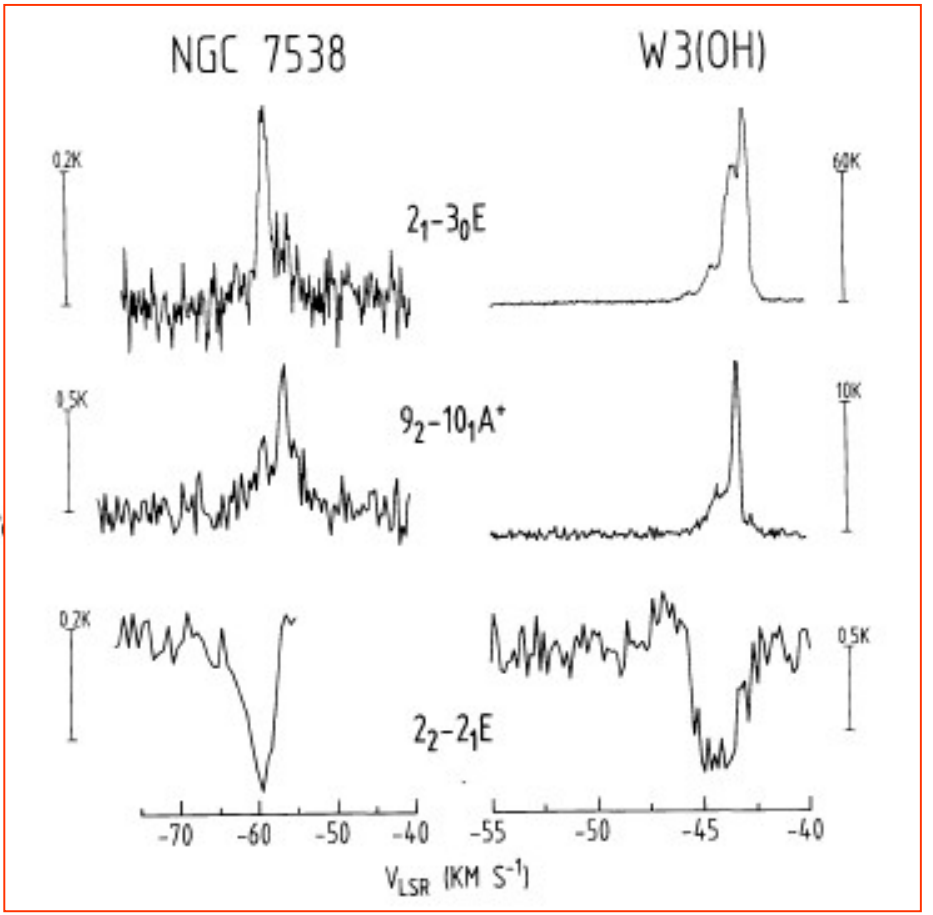
Astron. Astrophys. 147, L19–L22 (1985)

Letter to the Editor

The discovery of a new masering transition of interstellar methanol

T. L. Wilson, C. M. Walmsley, K. M. Menten, and W. Hermsen

Max-Planck-Institut für Radioastronomie, Auf dem Hügel 69, D-5300 Bonn 1, F

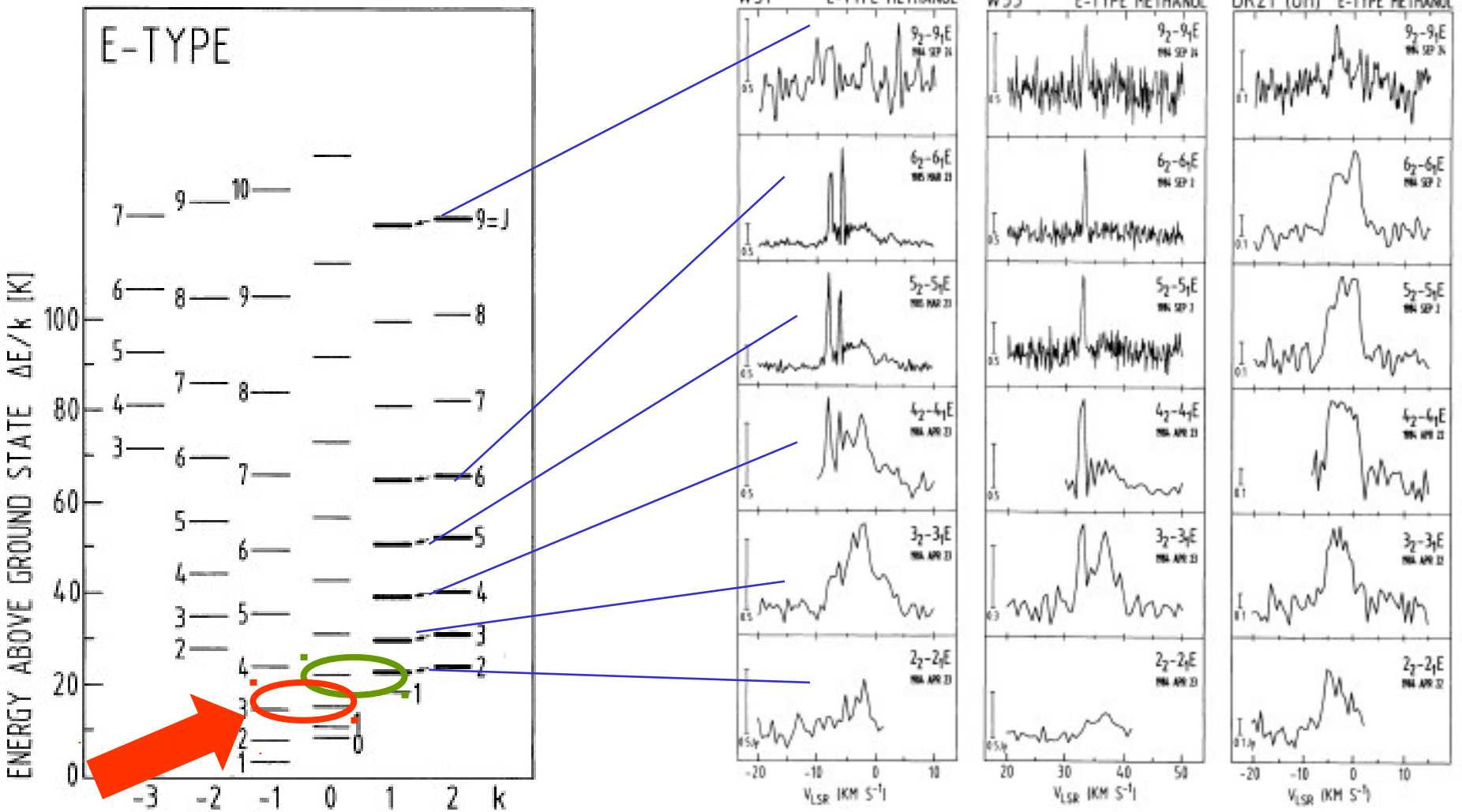


Astron. Astrophys. 157, 318–328 (1986)

The centimeter transitions of *E*-type methanol

K.M. Menten, C.M. Walmsley, C. Henkel, and T.L. Wilson

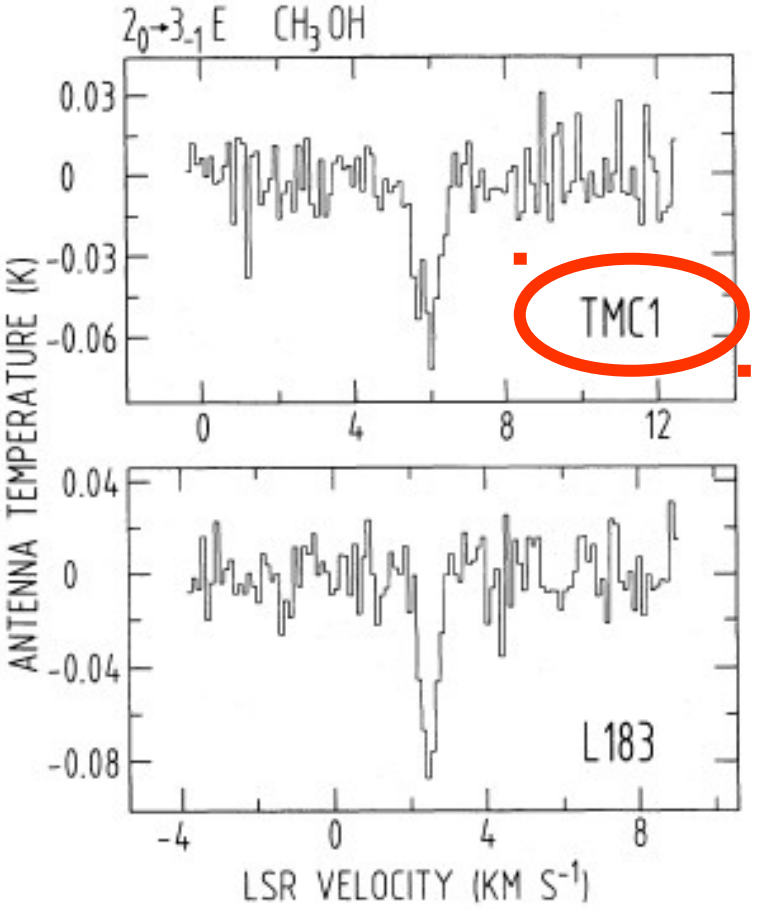
Max-Planck-Institut für Radioastronomie, D-5300 Bonn 1, Auf dem Hügel 69, Federal Republic of Germany



Astron. Astrophys. 197, 271–273 (1988)

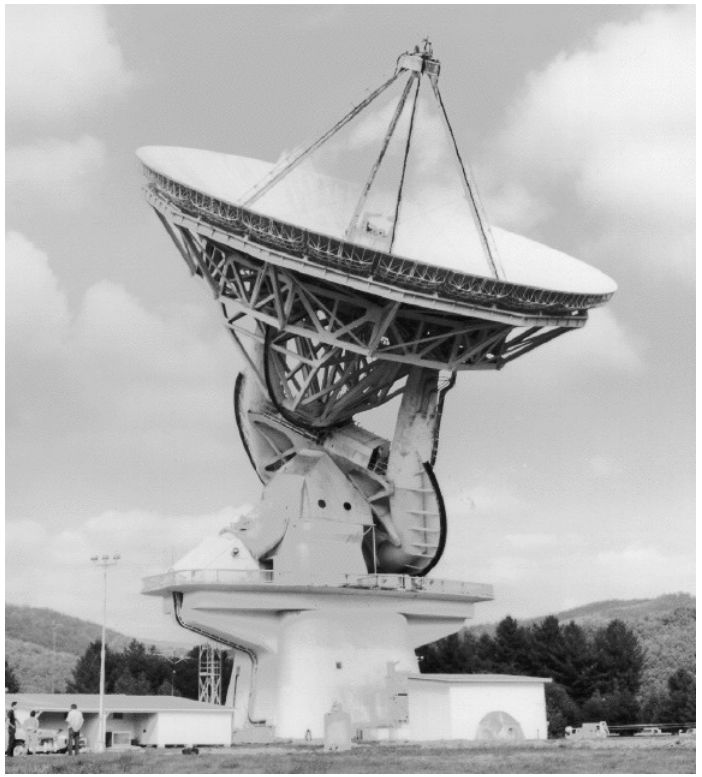
Anti-inversion of the 12.1 GHz methanol line towards dark clouds

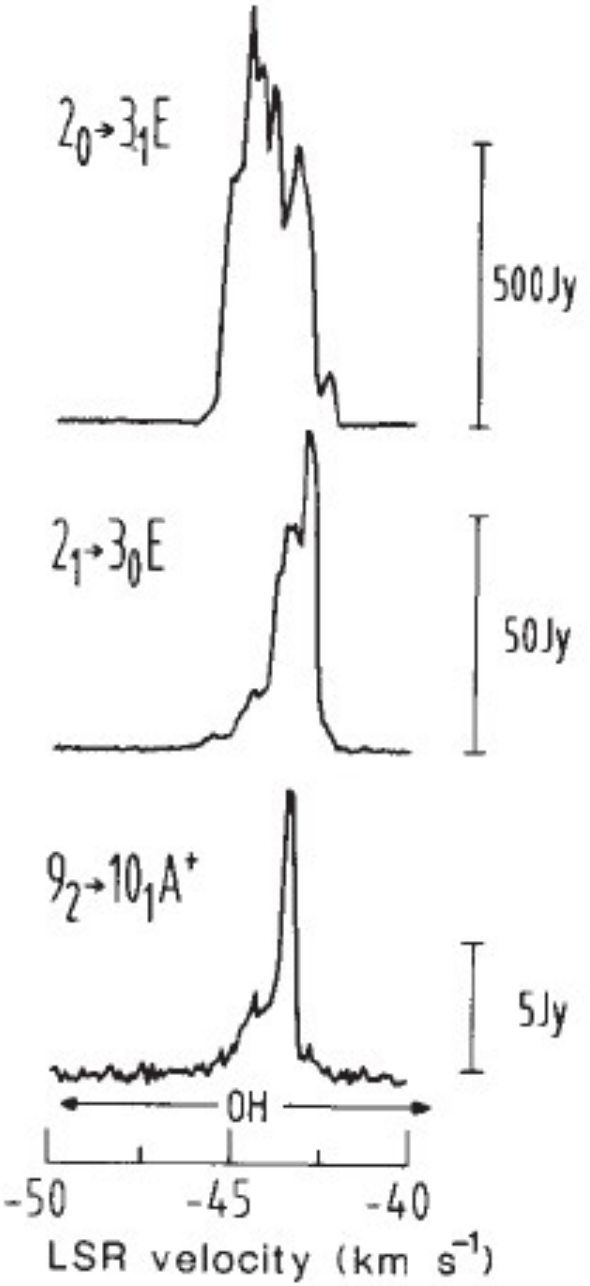
C. M. Walmsley [1], W. Batrla [2], H. E. Matthews [3,**] and K. M. Menten [1,*]



Detection of strong methanol masers towards galactic H II regions

W. Batrla*, H. E. Matthews†, K. M. Menten‡ & C. M. Walmsley‡





30 y (!) after first methanol maser paper

A&A 592, A31 (2016)
DOI: 10.1051/0004-6361/201527974

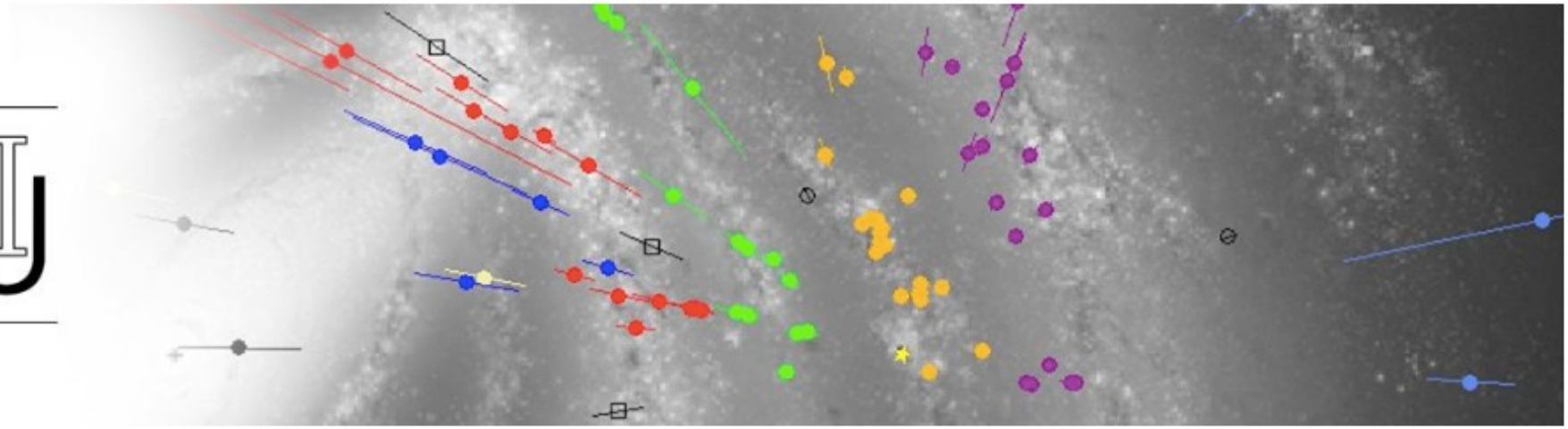
Astronomy & Astrophysics

Physical characteristics of bright Class I methanol masers

S. Leurini[1], K. M. Menten[1], and C. M. Walmsley[2,3]

Astrophysical Masers: Unlocking the Mysteries of the Universe

IAU Symposium 336 | Cagliari, 4-8 September 2017



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This conference is dedicated to the memory of Malcolm Walmsley (1941-2017)

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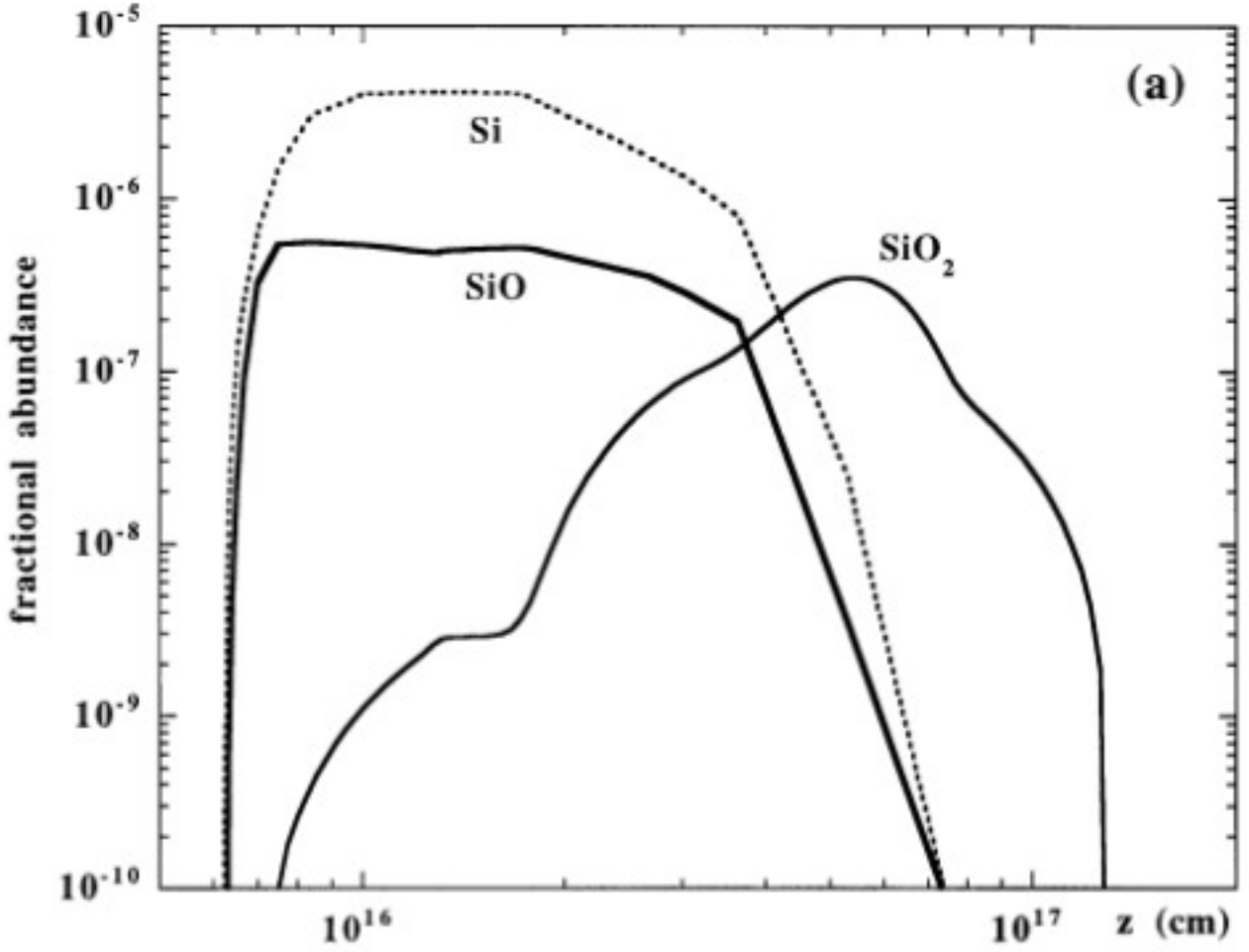
Astron. Astrophys. 321, 293–304 (1997)

ASTRONOMY
AND
ASTROPHYSICS

Longterm Collaborations

SiO production in interstellar shocks*

P. Schilke[1], C.M. Walmsley[2], G. Pineau des Forêts[3], and D.R. Flower[4]

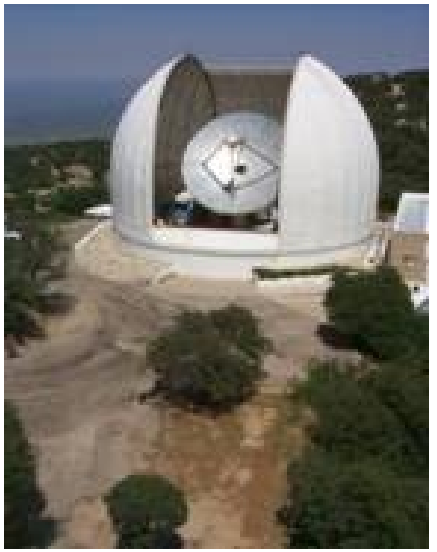


THE ASTROPHYSICAL JOURNAL, 256:151–155, 1982 May 1

A SEARCH FOR INTERSTELLAR AND STELLAR IRON MONO

A. J. MERER
University of British Columbia
C. M. WALMSLEY
Max-Planck-Institut für Radioastro… …is at Urbana-Champaign
E. CHU…
University of Wisc…
Received 1981 September 17; acc…

FeO $^5\Delta_4$ J=5–4
153.135
GHz



Line 10 × weaker than old 3σ upper limit!

THE ASTROPHYSICAL JOURNAL, 566:L109–L112, 2002 February 20

C. M. WALMSLEY
Osservatorio Astrofisico di Arcetri, Largo E. Fermi 5, I-50125 Florence, Ita…
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Observatorio Astronómico Nacional (Instituto Geográfico Nacional), …
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G. PINEAU DES FORÊTS
Institut d'Astrophysique Spatiale, Université de Paris-Sud, Batiment 121, F-92405 Or…
AND
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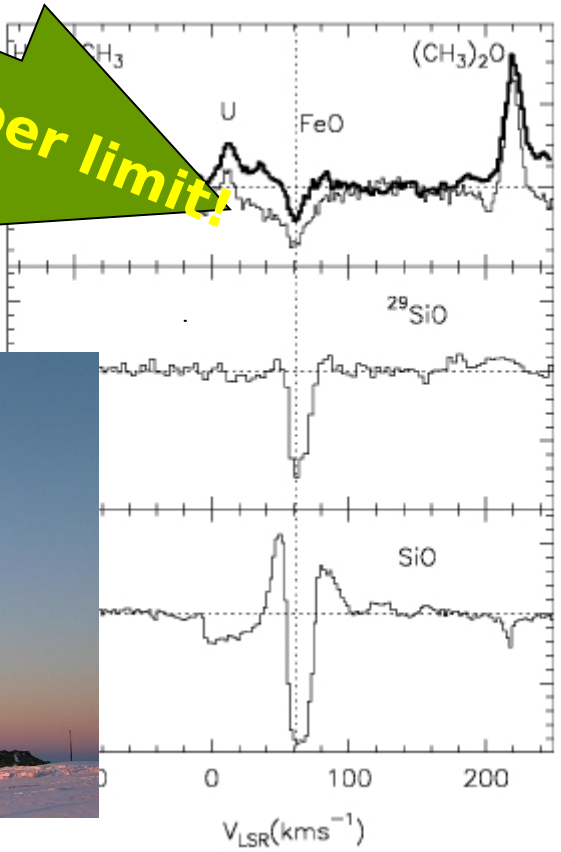
Received 2001 December 21; accepted 2002 January 17; publishe…



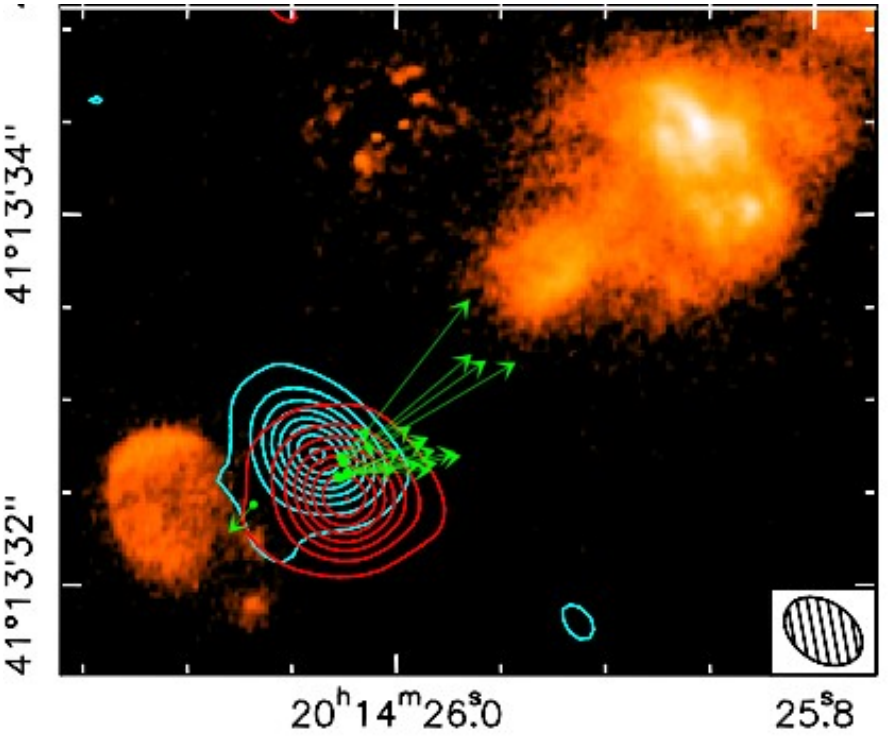

Arcetri: Gruppo Radioastronomia

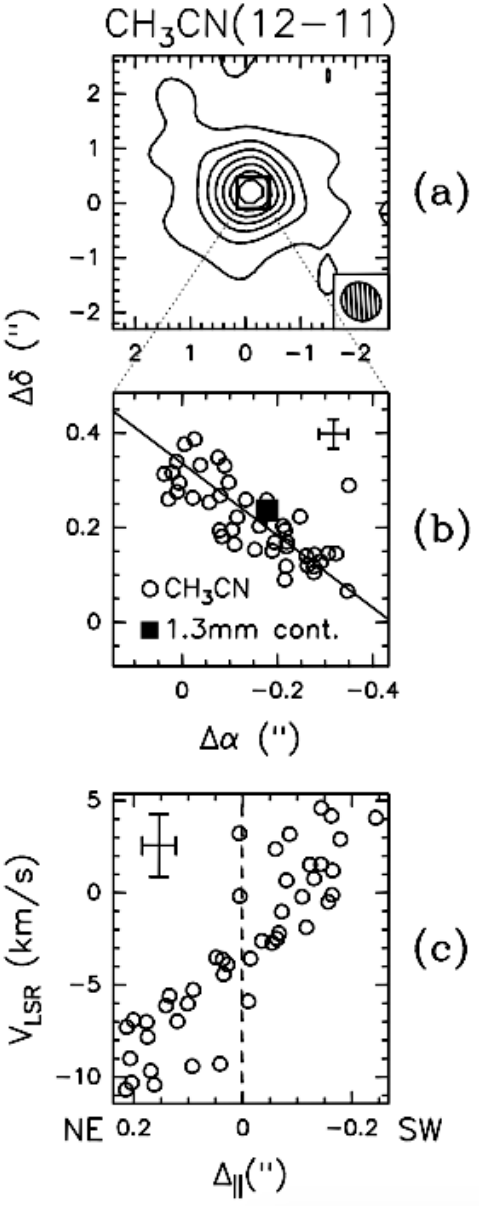
Astron. Astrophys. 345, 949–964 (1999)

ASTRONOMY AND ASTROPHYSICS

Unveiling the disk-jet system in the massive (proto)star IRAS 20126+4104

R. Cesaroni[1], M. Felli[1], T. Jenness[2], R. Neri[3], L. Olmi[4], M. Robberto[5,6], L. Testi[1,7], and C.M. Wa





Cesaroni+ 2014

THE ASTROPHYSICAL JOURNAL, 523:L165–L169, 1999 October 1

CO DEPLETION IN THE STARLESS CLOUD CORE L1544

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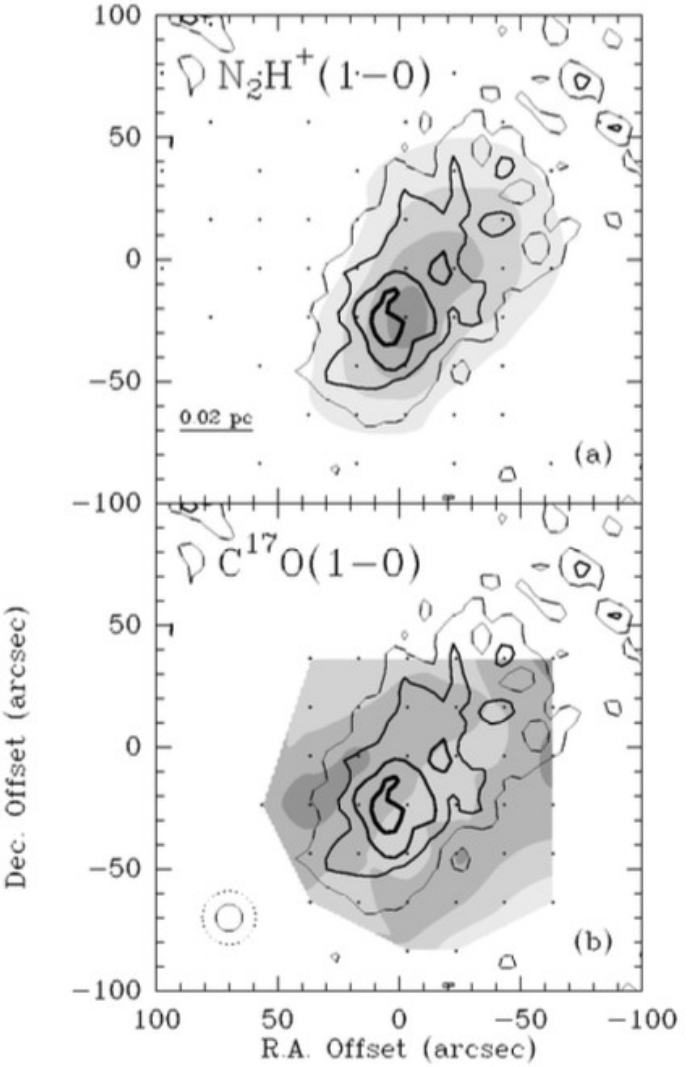
Received 1999 July 9; accepted 1999 August 4; published 1999 August 27

Also by Caselli, Walmsley et al:

- **Deuteration**
- **Ionization fraction**
- **…**



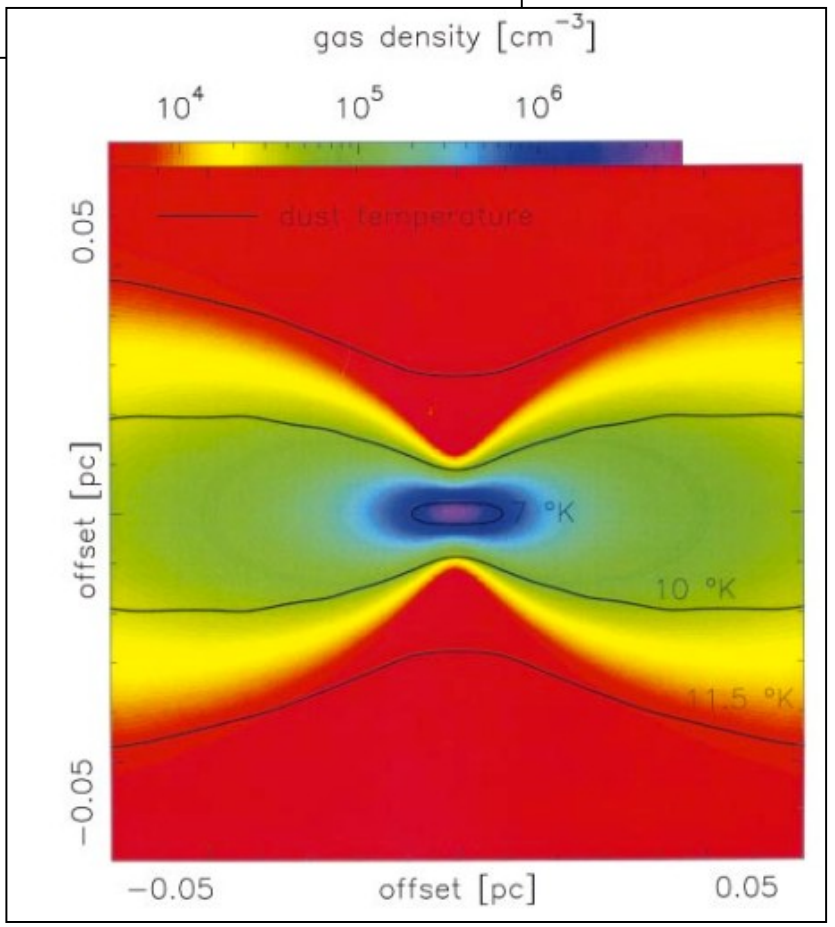
Theoretical studies

A&A 376, 650–662 (2001)
DOI: 10.1051/0004-6361:20010778

Astronomy & Astrophysics

The dust temperature distribution in prestellar cores

A. Zucconi[1], C. M. Walmsley[2], and D. Galli[2]



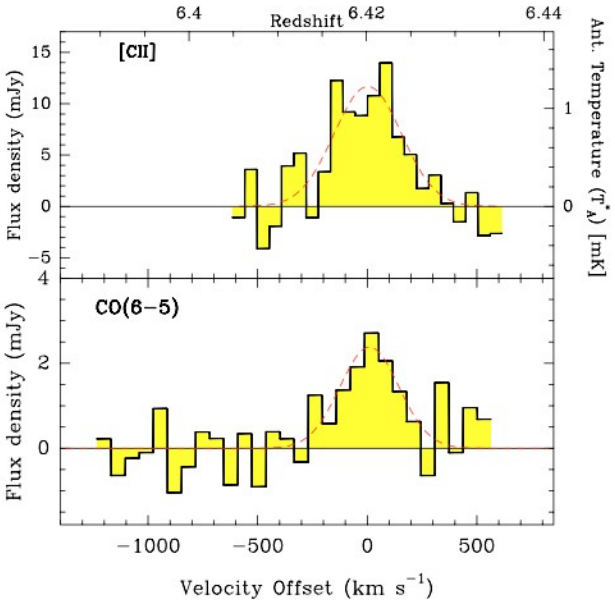
The high z Universe

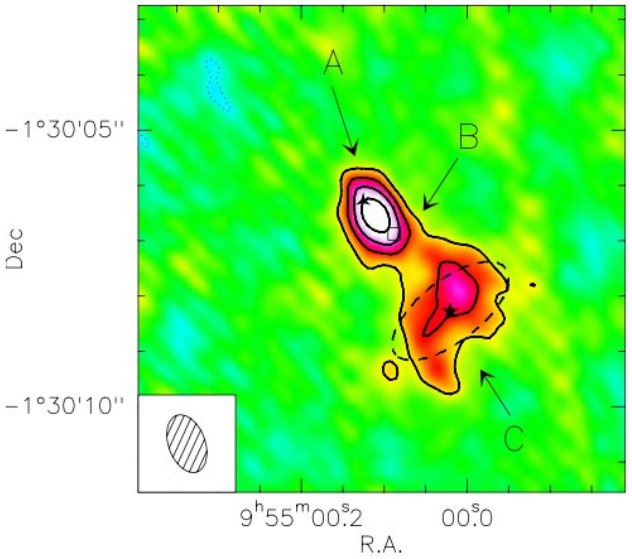
A&A 440, L51–L54 (2005)
DOI: 10.1051/0004-6361:200500165

Astronomy & Astrophysics

First detection of [CII]158 μm at high redshift: vigorous star formation in the early universe

R. Maiolino[1], P. Cox[2], P. Caselli[1], A. Beelen[3], F. Bertoldi[4], C. L. Carilli[5], M. J. Kaufman[6], K. M. Menten[3], T. Nagao[1,7], A. Omont[8], A. Weiß[9,3], C. M. Walmsley[1], and F. Walter[10]





A&A 543, A114 (2012)
DOI: 10.1051/0004-6361/201118705

Astronomy & Astrophysics

Resolved [CII] emission in a lensed quasar at $z = 4.4^{\star}$

S. Gallerani[1,2], R. Neri[2], R. Maiolino[1,3], S. Martín[4], C. De Breuck[4], F. Walter[5], P. Caselli[6], M. Krips[2], M. Meneghetti[7,8], T. Nagao[9], J. Wagg[4], and M. Walmsley[10,11]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New scientific editorial structure for the Letters section (May 2005)

The Letters Editor, Dr. P. Schneider, will complete his terms of service on 31 January 2006. A&A is indebted to him for his thoughtful and competent editing over the past several years. As a consequence of his departure, the Board has decided to restructure the manner in which the Letters will be handled as of 1 January 2006. The Associate Editor-in-Chief, Dr. M. Walmsley, will also become Editor-in-Chief for the Letters, and he will forward the Letters to the appropriate topical Associate Editor to organize the reviewing process. Likewise, the Editor-in-Chief, Dr. C. Bertout, will become the Associate Letters-Editor-in-Chief. This change will permit a more specialized treatment of Letters in the future and also allow Letters to benefit from language editing. Hence, after 1 January 2006, manuscripts for Letters should be submitted via the A&A Manuscript Management System (MMS) that is already in place for Main Journal submissions. Letters submitted before that will be handled by the current Letters Editor even after 1 January 2006.

Malcolm made numerous fundamental contributions to the physics and chemistry of star formation and the interstellar medium. He was an exceptional scientist, a highly esteemed colleague and a true gentleman.