Chemistry Study on Hot Corino Serpen South CARMA-7

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ABSTRACT

Context. To study the interesting chemistry of a newly found hot corino CARMA-7 in Serpen South region
Aims. Chemical line identification and source motion analysis
Methods. CASA ADMIT + other spectral processing tools
Results. See line identification and conclusion

Key words. Hot corino, Astrochemistry, Scientific computing

1. Introduction

This thesis contains spectral line analysis of 6 spectral windows of ALMA observation on source Serpen South CARMA-7.

2. Observation

ALMA observation was conducted with 6 spectral windows.

3. Conclusions

1. Item placeholder

References

Baker, N. 1966, in Stellar Evolution, ed. R. F. Stein,& A. G. W. Cameron (Plenum, New York) 333

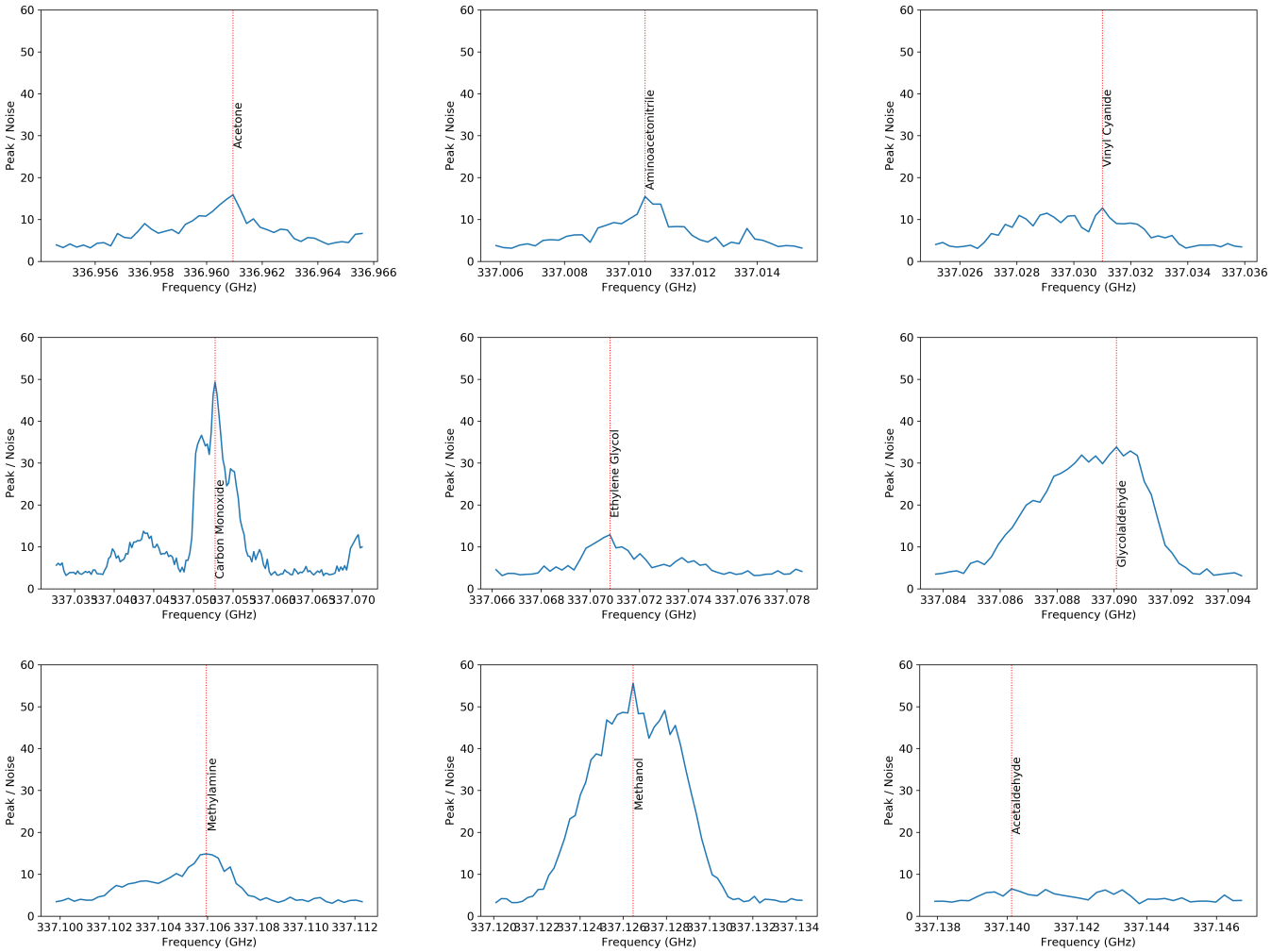

Fig. 1. Promising molecular lines in spectral window 0

Table 1. Line identification results for spectral window 0

Molecule	Name	Transition	Frequency	E_u	Intensity	Velocity	v_{lsr}	Peakrms
$c-HCCCH$	Cyclopropenylidene	$4_{4,1}-3_{1,2}$	336.94859	32.2203	0.4085	7.88862089526	8.0	1.0683
$(CH_3)_2CO$	Acetone	$33_{1,32}-32_{2,31}EE$	336.96839	284.9042	8.7998	8.95064102901	8.0	11.9853
$CH_2CH_{13}CN$	Vinyl Cyanide	$12_{3,10}-11_{2,9}$	336.97316	54.8334	2.7746	8.61614536631	8.0	3.779
$(CH_3)_2CO$	Acetone	$24_{12,13}-23_{11,12}EE$	336.97681	230.3935	0.165	7.75784010018	8.0	0.4314
$(CH_3)_2CO$	Acetone	$45_{28,17}-45_{25,20}AA$	336.98001	844.4718	−0.005	8.6029325408	8.0	−1.1173
$(CH_3)_2CO$	Acetone	$33_{1,32}-32_{2,31}AA$	336.98907	284.8304	3.0669	7.56408584877	8.0	4.1771
$_{13}CH_3CH_2CN$	Ethyl Cyanide	$55_{1,54}-55_{1,55}$	336.99572	634.8624	0.1916	6.78840381265	8.0	0.501
$g'Ga-(CH_2OH)_2$	Ethylene Glycol	$69_{18,51}v=1-69_{17,52}v=1$	337.00907	1346.1964	0.1628	8.5934862349	8.0	0.4256
$t-H_{13}COOH$	Formic Acid	$15_{14,2}-14_{14,1}$	337.01275	731.763	0.6376	7.05712805295	8.0	0.8684
H_2NCH_2CN	Aminoacetonitrile	$37_{5,33}-36_{5,32}$	337.01833	337.6508	8.4895	8.82510997129	8.0	11.5626
$c-H_{13}CCCH$	Cyclopropenylidene	$21_{11,10}-21_{11,11}$	337.02915	649.5308	0.0	0.0	8.0	0.0
$c-H_{13}CCCH$	Cyclopropenylidene	$21_{11,10}-21_{10,11}$	337.03067	649.5309	8.0889	7.61986732531	8.0	11.017
CH_2CHCN	Vinyl Cyanide	$36_{2,35}-35_{2,34}$	337.03974	309.7482	6.4719	7.36909982843	8.0	8.8147
$C_{17}O$	Carbon Monoxide	$J=3-2$	337.0611	32.3538	33.3285	0.529522196414	8.0	45.3933
$_{33}SO_2$	Sulfur Dioxide	$5_{5,1}-6_{4,2}, F=13/2-15/2$	337.07327	75.1261	0.2483	8.49023686004	8.0	0.6492
$g'Ga-(CH_2OH)_2$	Ethylene Glycol	$33_{8,25}v=0-32_{8,24}v=1$	337.08211	309.0677	6.5759	5.87896210587	8.0	8.9564
$H_2CCCHCN$	Cyanoallene	$67_{1,66}-66_{2,65}$	337.08811	560.6032	0.2019	8.10412739257	8.0	0.5279
$(CH_3)_2CO$	Acetone	$31_{19,13}-31_{16,16}AA$	337.09083	401.5121	0.3214	9.26051096965	8.0	0.8403
$cis-CH_2OHCHO$	Glycolaldehyde	$29_{13,17}-28_{13,16}$	337.09926	344.463	21.9353	7.5348520422	8.0	29.8758
$cis-CH_2OHCHO$	Glycolaldehyde	$29_{13,16}-28_{13,15}$	337.09927	344.463	0.0	0.0	8.0	0.0
$g'Ga-(CH_2OH)_2$	Ethylene Glycol	$69_{18,52}v=1-69_{17,53}v=1$	337.10336	1346.196	0.2531	7.23270623155	8.0	0.6617
$H_2C_{34}S$	Thioformaldehyde	$10_{7,3}-9_{7,2}$	337.10773	732.617	0.2645	7.57139473287	8.0	0.6917
CH_3NH_2	Methylamine	$2_2E2-1-1_1E2-1, F=2-2$	337.11864	22.2636	0.0	0.0	8.0	0.0
CH_3NH_2	Methylamine	$2_2E2-1-1_1E2-1, F=2-1$	337.11894	22.2636	8.0177	3.74035836188	8.0	10.9201
$H_2C_{34}S$	Thioformaldehyde	$10_{0,10}-9_{0,9}$	337.12546	89.0504	0.2829	8.09050706866	8.0	0.7397
CH_3COOH	Acetic Acid	$13_{-6,7}-12_{-4,8}v=0$	337.12857	78.4063	0.1969	7.39337397552	8.0	0.5149
$CH_3OHvt=_0$	Methanol	$3_{3,0}-4_{2,2}$	337.13586	61.6392	37.9398	7.60014640425	8.0	51.6739
$g-CH_3CH_2OH$	gauche-Ethanol	$36_{1,36}-35_{2,34}, vt=1-0$	337.14207	587.8293	0.0009	9.09536620511	8.0	0.1992
$(CH_3)_2CO$	Acetone	$31_{19,13}-31_{16,16}EA$	337.1446	401.4505	−0.1184	7.80215130181	8.0	−0.3097
CH_3CHO	Acetaldehyde	$13_{1,12}-12_{-1,12}E$	337.15207	88.4514	1.8729	6.9240793504	8.0	2.5509
$g'Ga-(CH_2OH)_2$	Ethylene Glycol	$26_{17,9}v=1-26_{16,10}v=1$	337.16832	314.6439	0.1946	6.12705989523	8.0	0.5088
$g'Ga-(CH_2OH)_2$	Ethylene Glycol	$24_{17,7}v=0-24_{16,8}v=0$	337.17585	289.264	0.0	0.0	8.0	0.0