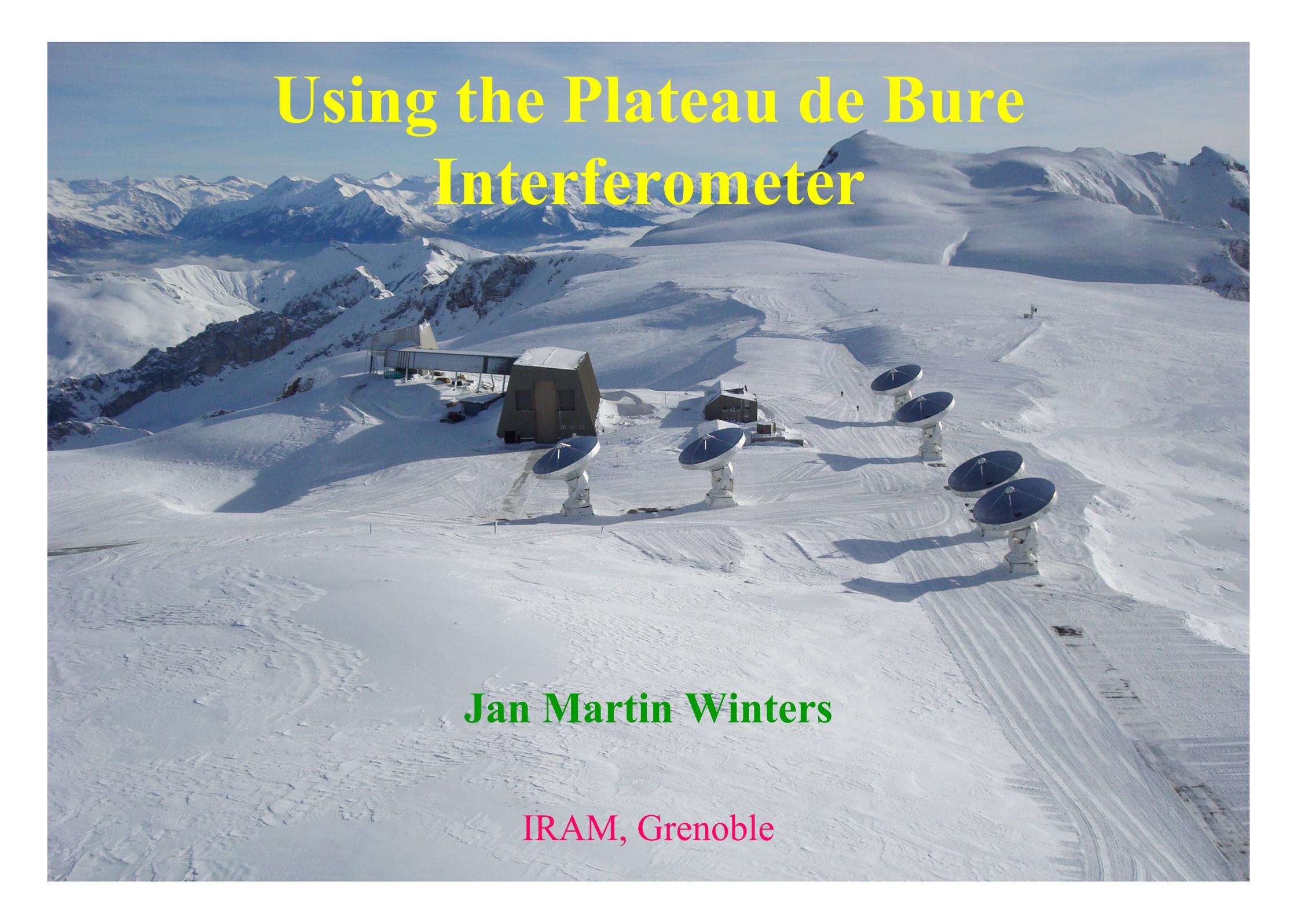


Using the Plateau de Bure Interferometer

An aerial photograph of the Plateau de Bure Interferometer site. The landscape is a vast, snow-covered plateau with several large, white, parabolic radio telescope dishes mounted on pedestals. In the background, there are rugged, snow-capped mountains under a clear blue sky. A small building and other structures are visible near the center of the site.

Jan Martin Winters

IRAM, Grenoble

Why should you use the Plateau de Bure Interferometer?

Because the signal is weak...
... and PdBI is sensitive!

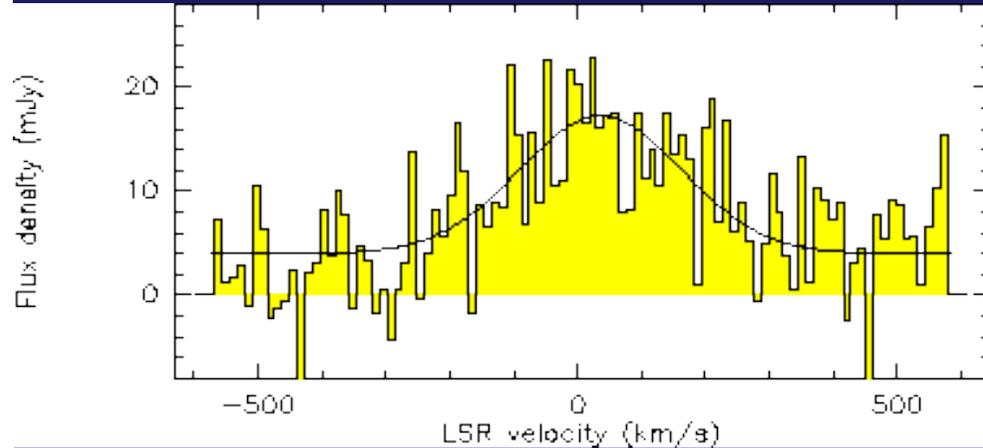
Well,..... Yes.
But now there's ALMA!

PdBI is on the northern hemisphere...
and
the pressure factor is only about 3!



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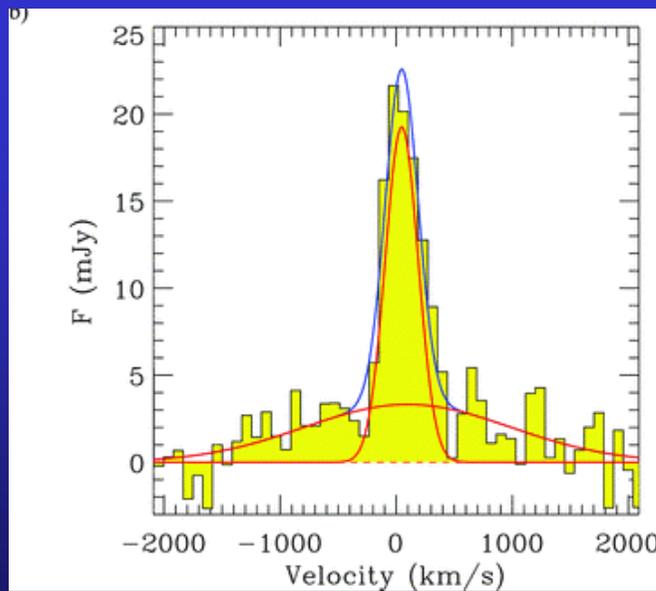
C⁺ at 256.17GHz in J1148+5251 @ z = 6.42



A-configuration: beam 0.31" x 0.23"

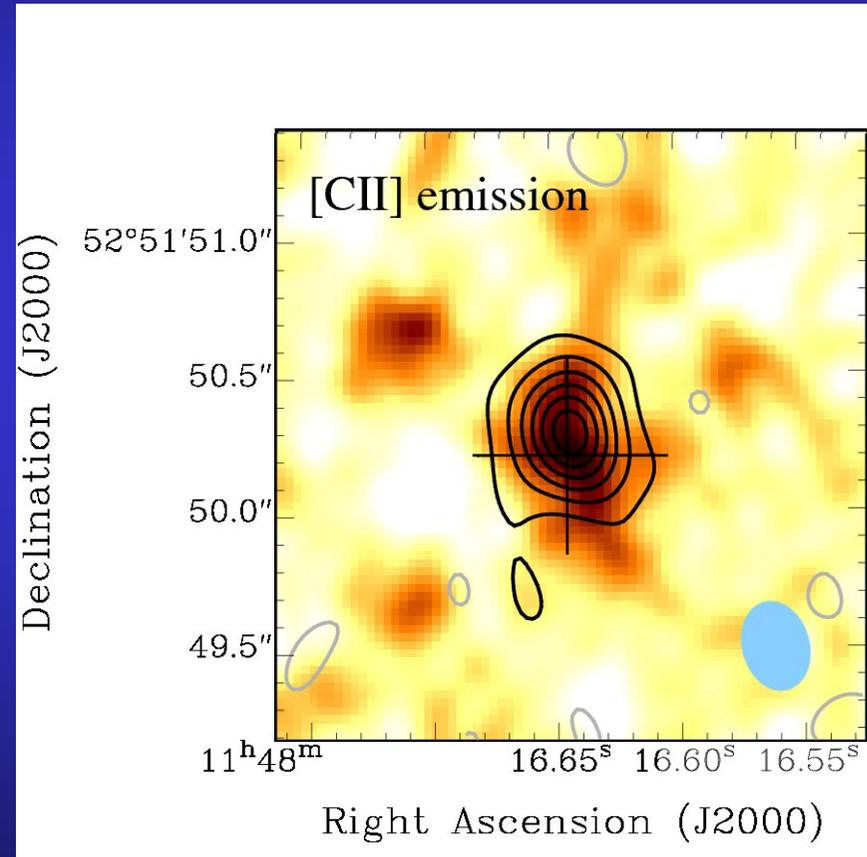
Walter et al. 2009 (Nature 457, 699)

Spectrum: 3.5hrs in D-configuration



11hrs in D
with WideX

Maiolino et al. 2012
(MNRAS 425, L66)



Proposal tech-sheet

IRAM Plateau de Bure Interferometer: Proposal Technical Summary

Please fill one sheet per frequency setup

- **Category and Project type:** 3-mm lines detection

- **Source position and velocity:**

Source	RA (J2000.0)	DEC (J2000.0)	LSR Velocity / Redshift (km/s)
0221+375	02:27:30.813	37:49:32.624	+0

- **For all projects (detection, mapping, mosaic, and snapshot):**

– *Configuration required:* A B C D Any

– *No. of tracks requested:* 0 0 0 0 0

– *Observing time requested:* $1.6 \times \text{on-source time} = 0\text{h}$

– *Sensitivity:* Resolution on-source time 1σ -sensitivity
0 MHz 0 hrs 0 mJy

- **For Mosaic projects:**

– *offset positions:* (,) (,) (,) (,)

- **Size of largest structure (in arcseconds):** unresolved

- **Continuum part:**

– *Expected continuum flux:* mJy

– *Expected continuum source size:* unresolved

– *Preferred observing frequency (pure continuum projects):*

- **For line projects:** (add sketch of frequency setup, e.g. as separate .eps file in your .tar archive)

– *Expected width of spectral line (to zero power)* km/s

– *Line rest frequencies:* 109.252 GHz

Point source sensitivity

$$\delta S = \frac{2k}{\eta_a A \cdot \eta_j \eta_C} \cdot \frac{\langle T_{sys} \rangle}{\eta_p \sqrt{N(N-1)} \sqrt{\delta\nu t_{on}}} \cdot \frac{1}{\sqrt{N_{pol}}}$$

A	collecting area of a single antenna (176.7m ²)
η_a	aperture efficiency (0.80 @ 3mm, 0.75 @ 2mm, 0.65 @ 1mm)
η_j	instrumental decorrelation $\eta_j = e^{-\sigma_j^2/2}$ (0.90 to 0.98)
η_C	correlator efficiency ($\eta_C = 0.88$)
k	Boltzmann constant
$\langle T_{sys} \rangle$	average system temperature [K]
η_p	atmospheric decorrelation $\eta_p = e^{-\sigma_p^2/2}$ (0.6 to 0.98)
N	Number of antennas (5 or 6) NB
$\delta\nu$	Spectral Bandwidth [Hz] (39 kHz to 2.5 MHz , 2 MHz to 3.6 GHz) WideX
t_{on}	On-source integration time [s], $t_{obs} = 1.6 t_{on}$
N_{pol}	Number of polarizations (1 or 2)
$\frac{2k}{\eta_a A \cdot \eta_j \eta_C}$	$= J_{pk}$: Conversion factor Kelvin to Jansky 22 Jy/K @ 3mm, 26 Jy/K @ 2mm, 35 Jy/K @ 1mm, 45 Jy/K @ 0.8mm

Sensitivity (II)

Expected **point source continuum sensitivities** in one hour with **WideX**:

- @ 100 GHz in a FOV of 50''

$$\approx 22 \cdot \frac{90}{0.90 \cdot 0.88 \cdot \sqrt{30} \cdot 3600 \cdot 10^6 \cdot 3600} \cdot \frac{1}{\sqrt{2}} \approx 0.09 \text{ mJy/beam}$$

- @ 150 GHz in a FOV of 33''

$$\approx 26 \cdot \frac{130}{0.85 \cdot 0.88 \cdot \sqrt{30} \cdot 3600 \cdot 10^6 \cdot 3600} \cdot \frac{1}{\sqrt{2}} \approx 0.16 \text{ mJy/beam}$$

- @ 230 GHz in a FOV of 21''

$$\approx 35 \cdot \frac{160}{0.80 \cdot 0.88 \cdot \sqrt{30} \cdot 3600 \cdot 10^6 \cdot 3600} \cdot \frac{1}{\sqrt{2}} \approx 0.29 \text{ mJy/beam}$$

Brightness sensitivity (I)

The brightness sensitivity is related to the point source sensitivity by

$$\delta T = \frac{\lambda^2}{2k\Omega} \cdot \delta S = \rho \frac{\lambda^2}{\Theta_1\Theta_2} \cdot \delta S$$

δT	brightness sensitivity [K]
λ	observing wavelength [mm]
k	Boltzmann constant
Ω	synthesized beam solid angle [sr]
ρ	$\approx 15 \text{ [K Jy}^{-1} (\text{arcsec/mm})^{-2}]$ for untapered maps and natural weighting
Θ_1, Θ_2	axes of synthesized beam [arcsec]

Brightness sensitivity depends on angular resolution!

Brightness sensitivity (II)

Expected **line brightness sensitivities** in 8 hours (12h track)

1km/s bandwidth, dual polarization:

- @ 100 GHz in a beam of $1'' \times 1''$: $\delta T \approx 434$ mK
 $5'' \times 5''$: $\delta T \approx 17$ mK
- @ 150 GHz in a beam of $0.6'' \times 0.6''$: $\delta T \approx 916$ mK
 $3.3'' \times 3.3''$: $\delta T \approx 30$ mK
- @ 230 GHz in a beam of $0.3'' \times 0.3''$: $\delta T \approx 2000$ mK
 $2.2'' \times 2.2''$: $\delta T \approx 40$ mK

Receivers

	Band 1	Band 2	Band 3	Band 4
RF range [GHz]	80 - 116	129 - 174	201 - 267	277 - 371
Trec/[K] LSB	40 - 55	30 - 50	40 - 60	30 - 50
Trec/[K] USB	40 - 55	40 - 80	50 - 70	30 - 50
G_{im} [dB]	-10	-12 ... -10	-12 ... -8	-20
RF LSB [GHz]	80 - 104	129 - 165	201 - 264	277 - 359
RF USB [GHz]	104 - 116	164 - 174	264 - 267	289 - 371

When?

- **Summer:**
compact configurations (C and D)
=> Low resolution studies, detection experiments
at 3mm and 2mm,
only 5 antennas available in D-configuration from
May to September/October
- **Winter offers best observing conditions:**
Best atmosphere (transparency, phase stability)
All four configurations (compact to extended)
All 6 antennas available
- **Observations at 1.3mm:** only possible from September to April
- **Observations at 0.8mm:** 2-4 weeks, most likely in Jan/Feb

Sensitivity considerations

- **Caution:**

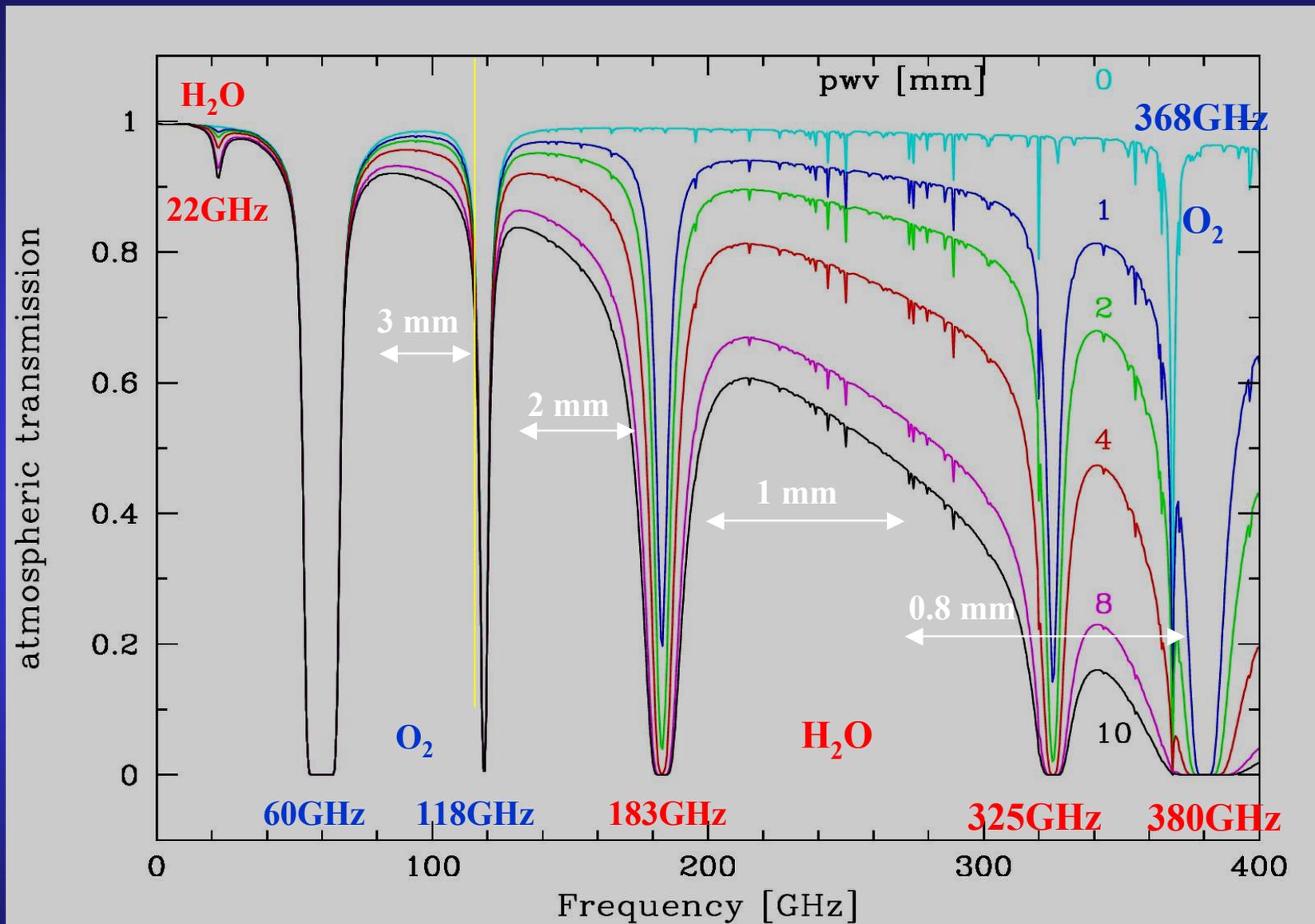
At 115GHz the atmospheric O₂ line degrades sensitivity by about 40% already in good observing conditions 

- **Request a configuration for mapping**

e.g. AB configuration = 2 tracks (8hrs each)
... but evaluate the sensitivity as well!

- **Request a point source sensitivity for detection**

... but evaluate the integration time as well!



(standard) Observing sequence

Calibrator 1

Bandpass	2x5sec	} ~3min	} ~5min
Auto	1x4sec		
Cali	2(3)x5sec		
Corr	3x45sec		
Focus	5x5sec		
Point	2x30sec		

Calibrator 2

Bandpass	2x5sec	} ~3min
Auto	1x4sec	
Cali	2x5sec	
Corr	3x45sec	

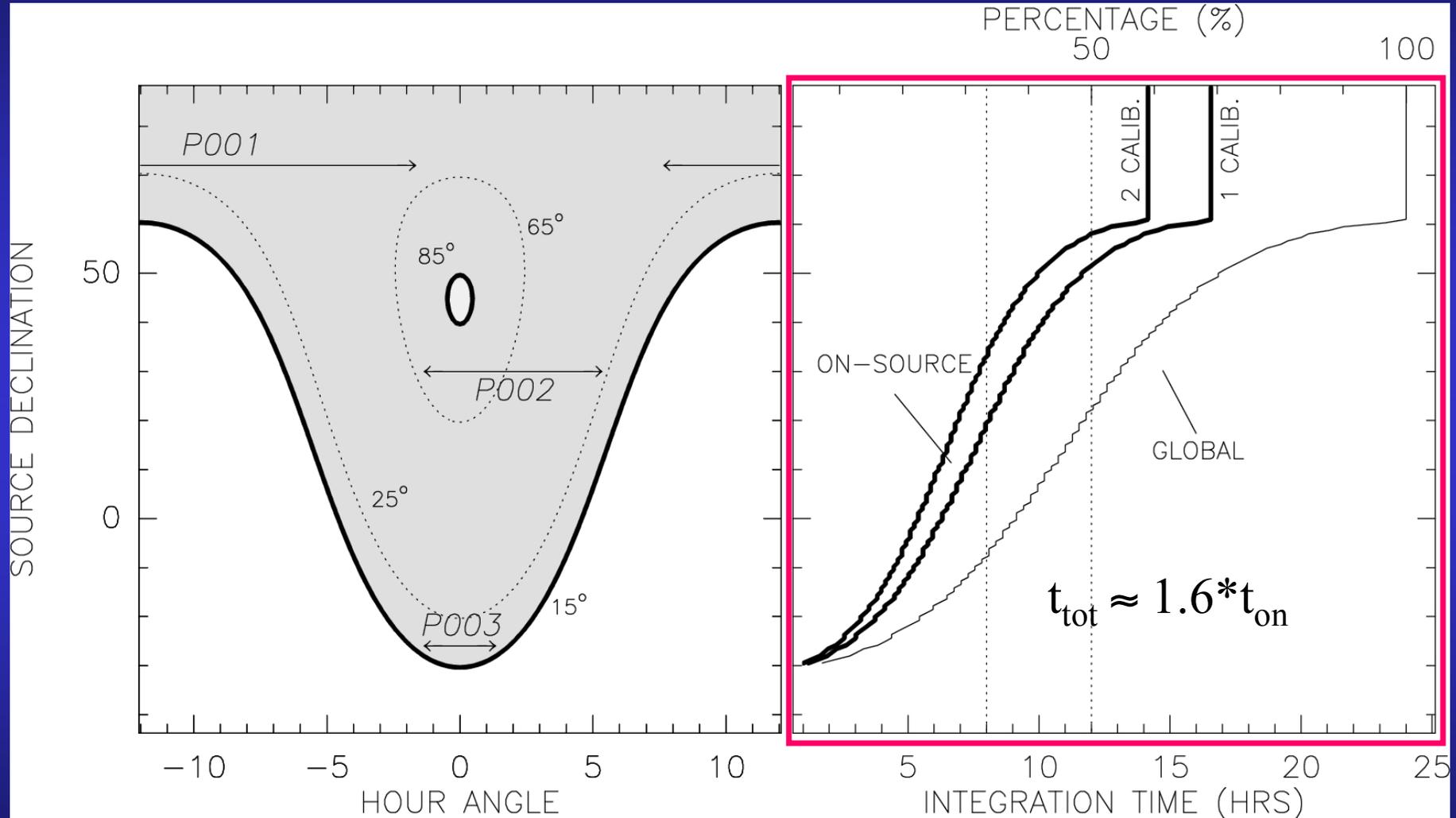
Source 1

Bandpass	2x5sec	} ~23min
Auto	1x4sec	
Cali	2x5sec	
Corr	30x45sec	

Track sharing:

Source 1: $\sim(30/N_{\text{sources}}) \times 45\text{sec}$
Source 2: $\sim(30/N_{\text{sources}}) \times 45\text{sec}$
Source 3: $\sim(30/N_{\text{sources}}) \times 45\text{sec}$
.
.
.
Source N: $\sim(30/N_{\text{sources}}) \times 45\text{sec}$

Observing time



Has my object already been observed?

- **Consult the CDS (Strasbourg)**
- **Consult the Science Operation Group (SOG; sog@iram.fr)**
- **The raw data archive is not (yet) public**



VizieR Service

Search Criteria

Preferences

max: 50

HTML Table

All columns

▶ Compute

Mirrors

CDS, France

Find catalogs among 10204 available

Clear Find...

Expand search

? **Catalog**, author's name, word(s) from title, description, etc. e.g.: AGN, Veron, I/239, or bibcodes...

▶ **Search for catalogs by column descriptions (UCD)** ?

Wavelength Mission Astronomy

Radio	AKARI	AGN
IR	ANS	Abundances
optical	ASCA	Ages
UV	BeppoSAX	Associations
EUV	CGRO	Atomic_Data
X-ray	COBE	BL_Lac_objects
Gamma-ray	Chandra	Binaries:cataclysmic

Search by Position across 10663 tables

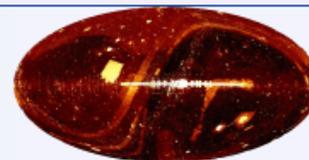
Target Name (resolved by [Sesame](#)) or Position:

Target dimension:

Clear J2000 arcmin

Radius Box size

[More about VizieR](#)



Find Catalogs

Browsing modes: [Designation](#), [Acronyms](#), [Favorites](#), [Dates](#), [Image.spectra](#), [Kohonen](#)
Or list [the large surveys](#)

Thanks for acknowledging the VizieR Service

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Catalog Selection Page - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://vizier.u-strasbg.fr/viz-bin/VizieR-2

Go back one page Release Notes Fedora Project Red Hat Free Content IPP phpMyAdmin Neobeo [IRAM] Ve... Welcome to AgileTi...











Catalog Selection Page

2 catalogs found (obsoleted catalogs discarded)

Search Criteria

Keywords
iram

Tables

VIII/66
..list
B/iram
..pdbi
..30m

Enlarge

Preferences

max: 50

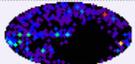
HTML Table

All columns

Compute

Mirrors

CDS, France

<input type="checkbox"/>	VIII/66	IRAM observations in pre-star forming regions (Falgarone+ 1998-2001)	cube/fits Similar Catalogs ReadMe+ftp	
<input type="checkbox"/>	VIII/66/list	(c) List of data [cube/fits] (40 rows)		
<input type="checkbox"/>	B/iram	IRAM Observation Logs 1991-2010 (IRAM 1991-2012) The Plateau de Bure Interferometer Observation Log between 1991-12-01 and 2010-03-31	Similar Catalogs ReadMe+ftp	
<input checked="" type="checkbox"/>	B/iram/pdbi	(c) The Plateau de Bure Interferometer Observation Log between 1991-12-01 and 2010-03-31 (14955 rows)		
<input type="checkbox"/>	B/iram/30m	(c) List of observations at 30m instrument between 2009-09-30 and 2010-12-31 (calibration observations not included) (75814 rows)		
<input type="checkbox"/>	B/iram/pdbi_pi	List of PI investigators of PdBI instrument (2032 rows)		
<input type="checkbox"/>	B/iram/30m_pi	List of PI investigators of 30m instrument (156 rows)		
<input type="checkbox"/>	Reset All			
ALL		Query selected Tables	Join selected Tables	

(c) indicates tables which contain celestial coordinates

Using the VizieR Service

©UDS/CNRS Contact: 

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VizieR Search Page

Simple Target List Of Targets

Target Name (resolved by [Sesame](#)) or Position: Target dimension:

Clear J2000 2 arcmin

Radius Box size

[Fast Xmatch with large catalogs or Simbad](#)

Search Criteria
[Save in CDSportal](#)
Keywords Back
 iram
Tables
 Add
 VIII/66
 ..list
 B/iram
 ..pdbi
 ..30m
 Enlarge Choose

B/iram IRAM Observation Logs 1991-2010 (IRAM 1991-2012) The Plateau de Bure Interferometer Observation Log between 1991-12-01 and 2010-03-31 [Similar Catalogs](#) [ReadMe+ftp](#)

1.B/iram/pdbi The Plateau de Bure Interferometer Observation Log between 1991-12-01 and 2010-03-31 (14955 rows)

Simple Constraint List Of Constraints

Query by [Constraints](#) applied on Columns (Output Order: + -)

Submit Reset All

Show	Sort	Column	Constraint	Explain (UCD)
<input type="checkbox"/>	<input type="radio"/>	recno	<input type="text"/>	Record number within the original table (starting from 1) (meta.record)
<input type="checkbox"/>	<input type="radio"/>	Nw	<input type="text"/>	[11,18] Internal indicator (meta.code)
<input checked="" type="checkbox"/>	<input type="radio"/>	Prog	<input type="text"/> (char)	Identification code of the program (meta.code;obs)
<input checked="" type="checkbox"/>	<input type="radio"/>	Name	<input type="text"/> (char)	Source name, as mentioned in the observing program (meta.id)

VizieR Result Page

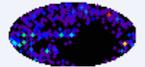
- Show the target form
- Show constraint information

The 3 columns in **color** are computed by VizieR, and are **not part of the original data**.

B/iram/pdbi [IRAM Observation Logs 1991-2010 \(IRAM 1991-2012\)](#)

[Post annotation](#) The Plateau de Bure Interferometer Observation Log between 1991-12-01 and 2010-03-31 (14955 rows)

[ReadMe+ftp](#)



Search Criteria

[Save in CDSportal](#)

Keywords

iram

Tables

VIII/66

..list

B/iram

..pdbi

..30m

Constraints

RS Cnc

(2 arcmin)

Preferences

max: 50

Full	<i>r</i> arcmin	RAJ2000 "h:m:s"	DEJ2000 "d:m:s"	Prog	Name	Obs "Y:M:D"	tos s	Type	Vel km/s	n _l	Flow MHz	n _u	Fhigh MHz	n _h	Conf	RAJ2000 "h:m:s"	DEJ2000 "d:m:s"
1	0.0005	09:10:38.80	+30:57:47.3	O04D	RSCNC	2004-11-22	1200	MAP	7.0	L	115271	U	230538	L	6Cp	09:10:38.80	+30:57:47.3
2	0.0005	09:10:38.80	+30:57:47.3	O04D	RSCNC	2004-11-23	18000	MAP	7.0	L	115271	U	230538	L	6Cp	09:10:38.80	+30:57:47.3
3	0.0005	09:10:38.80	+30:57:47.3	O04D	RSCNC	2005-02-22	6900	MAP	7.0	L	115271	U	230538	L	6Bp	09:10:38.80	+30:57:47.3
4	0.0005	09:10:38.80	+30:57:47.3	O04D	RSCNC	2005-02-23	5100	MAP	7.0	L	115271	U	230538	L	6Bp	09:10:38.80	+30:57:47.3
5	0.0005	09:10:38.80	+30:57:47.3	O04D	RSCNC	2005-03-07	6000	MAP	7.0	L	115271	U	230538	L	6Bp	09:10:38.80	+30:57:47.3
6	0.0005	09:10:38.80	+30:57:47.3	O04D	RSCNC	2005-03-16	12000	MAP	7.0	L	115271	U	230538	L	6Cp	09:10:38.80	+30:57:47.3
7	0.0005	09:10:38.80	+30:57:47.3	O04D	RSCNC	2005-03-17	2400	MAP	7.0	L	115271	U	230538	L	6Cp	09:10:38.80	+30:57:47.3
8	0.0005	09:10:38.80	+30:57:47.3	O04D	RSCNC	2005-04-26	19200	MAP	7.0	L	115271	U	230538	L	6Dp	09:10:38.80	+30:57:47.3
9	0.0259	09:10:38.84	+30:57:48.7	A069	RS CNC	1992-04-09	4800	SNA	-20.0	L	115271	U			3C2	09:10:38.84	+30:57:48.7
10	0.0259	09:10:38.84	+30:57:48.7	A069	RS CNC	1992-04-10	4800	SNA	-20.0	L	115271	U			3C2	09:10:38.84	+30:57:48.7
11	0.0259	09:10:38.84	+30:57:48.7	A069	RS CNC	1992-04-20	2400	SNA	-20.0	L	115271	U			3C2	09:10:38.84	+30:57:48.7
12	0.0259	09:10:38.84	+30:57:48.7	A069	RS CNC	1992-04-22	2400	SNA	-20.0	L	115271	U			3C2	09:10:38.84	+30:57:48.7

VizieR Result Page - Mozilla Firefox

VizieR Correlated Data from <FONT COLOR='#000000': - + x

http://vizier.u-strasbg.fr/viz-bin/VizieR?-6N&-out.form=H0&/**&-source

VizieR Correlated Data from [Back] · [Forwd] · [Print] · [Close]
 B/iram/pdbi_pi

IRAM Observation Logs 1991-2010 (IRAM 1991-2012)
 B/iram/pdbi_pi List of PI investigators of PdBI instrument (2032 rows) [ReadMe+ftp](#)

Prog **PI** **Obs**

004D T.LEBERTRE [Obs](#)

Done

...pdbi
 ...30m
 Enlarge Choose
 Constraints
 RS Cnc
 (2 arcmin)
 Modify Query
 Preferences
 max: 50
 HTML Table

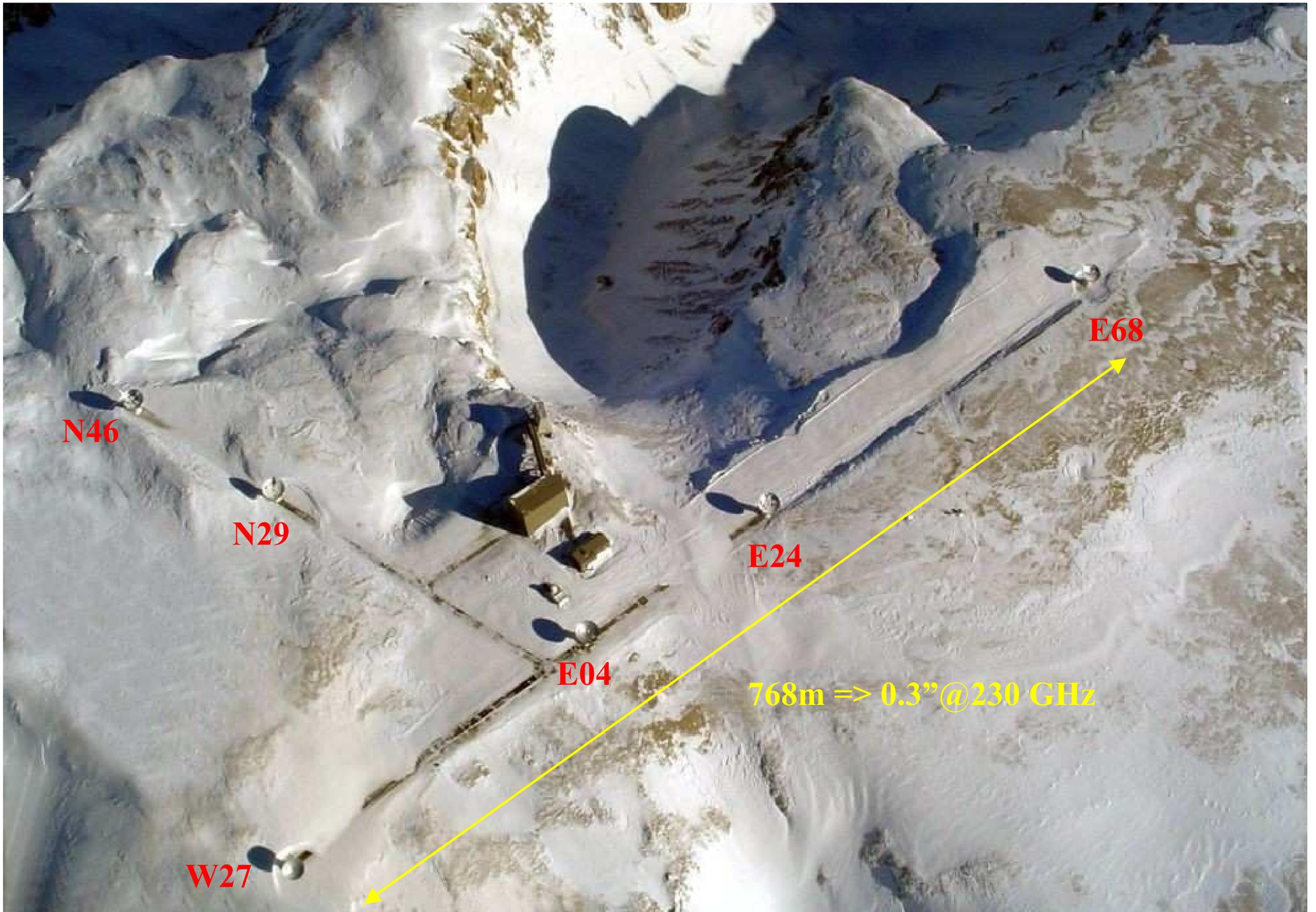
Obs :M:D"	tos s	Type	Vel km/s	n _l	Flow MHz	n _u	Fhigh MHz	n _h	Conf	RAJ2000 "h:m:s"	DEJ2000 "d:m:s"						
4-11-22	1200	MAP	7.0	L	115271	U	230538	L	6Cp	09:10:38.80	+30:57:47.3						
2	0.0005	09:10:38.80	+30:57:47.3	004D	RSCNC	2004-11-23	18000	MAP	7.0	L	115271	U	230538	L	6Cp	09:10:38.80	+30:57:47.3
3	0.0005	09:10:38.80	+30:57:47.3	004D	RSCNC	2005-02-22	6900	MAP	7.0	L	115271	U	230538	L	6Bp	09:10:38.80	+30:57:47.3
4	0.0005	09:10:38.80	+30:57:47.3	004D	RSCNC	2005-02-23	5100	MAP	7.0	L	115271	U	230538	L	6Bp	09:10:38.80	+30:57:47.3
5	0.0005	09:10:38.80	+30:57:47.3	004D	RSCNC	2005-03-07	6000	MAP	7.0	L	115271	U	230538	L	6Bp	09:10:38.80	+30:57:47.3
6	0.0005	09:10:38.80	+30:57:47.3	004D	RSCNC	2005-03-16	12000	MAP	7.0	L	115271	U	230538	L	6Cp	09:10:38.80	+30:57:47.3
7	0.0005	09:10:38.80	+30:57:47.3	004D	RSCNC	2005-03-17	2400	MAP	7.0	L	115271	U	230538	L	6Cp	09:10:38.80	+30:57:47.3
8	0.0005	09:10:38.80	+30:57:47.3	004D	RSCNC	2005-04-26	19200	MAP	7.0	L	115271	U	230538	L	6Dp	09:10:38.80	+30:57:47.3
9	0.0259	09:10:38.84	+30:57:48.7	A069	RS CNC	1992-04-09	4800	SNA	-20.0	L	115271	U			3C2	09:10:38.84	+30:57:48.7
10	0.0259	09:10:38.84	+30:57:48.7	A069	RS CNC	1992-04-10	4800	SNA	-20.0	L	115271	U			3C2	09:10:38.84	+30:57:48.7
11	0.0259	09:10:38.84	+30:57:48.7	A069	RS CNC	1992-04-20	2400	SNA	-20.0	L	115271	U			3C2	09:10:38.84	+30:57:48.7
12	0.0259	09:10:38.84	+30:57:48.7	A069	RS CNC	1992-04-22	2400	SNA	-20.0	L	115271	U			3C2	09:10:38.84	+30:57:48.7

Configurations

- **Four configurations are needed to take properly into account baseline range and operation with 6 antennas**

Configuration	Stations
D	W08 W05 E03 N02 N07 N11
C	W12 W09 E04 E10 N11 N17
B	W27 W12 E12 E23 N20 N46
A	W27 E04 E24 E68 N29 N46

- **The A and B configurations are scheduled during the winter period only**



N46

N29

E04

E24

E68

W27

768m => 0.3'' @ 230 GHz

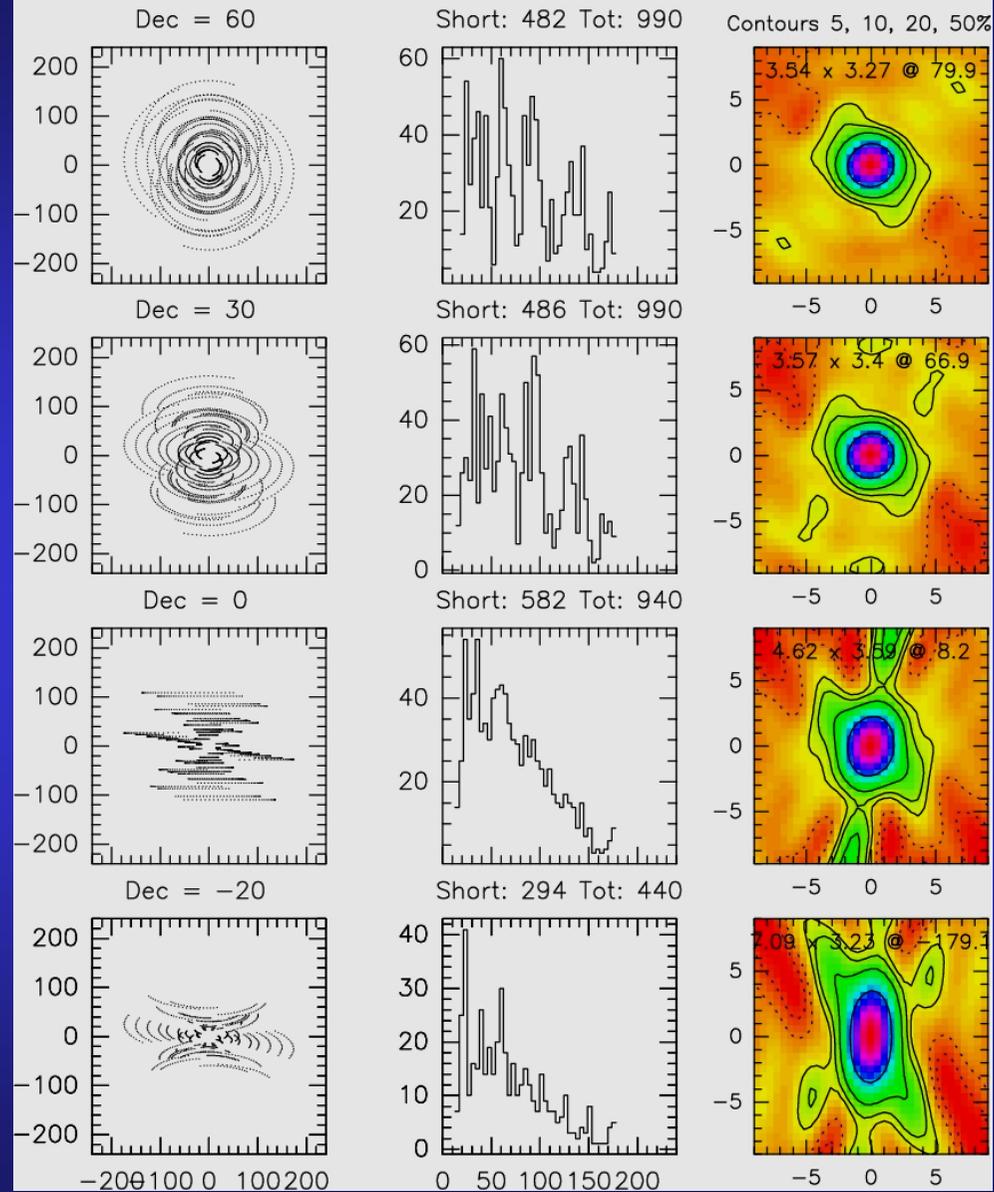
Which configuration is appropriate?

Standard sets of configurations are:

Set	Purpose
D	5" @ 100 GHz detection/lowest resolution
CD	3.5" @ 100 GHz
(C	2.7" @ 100 GHz detection at low declination)
BC	1.7" @ 100 GHz
AB	0.95" @ 100 GHz
A	0.82" @ 100 GHz

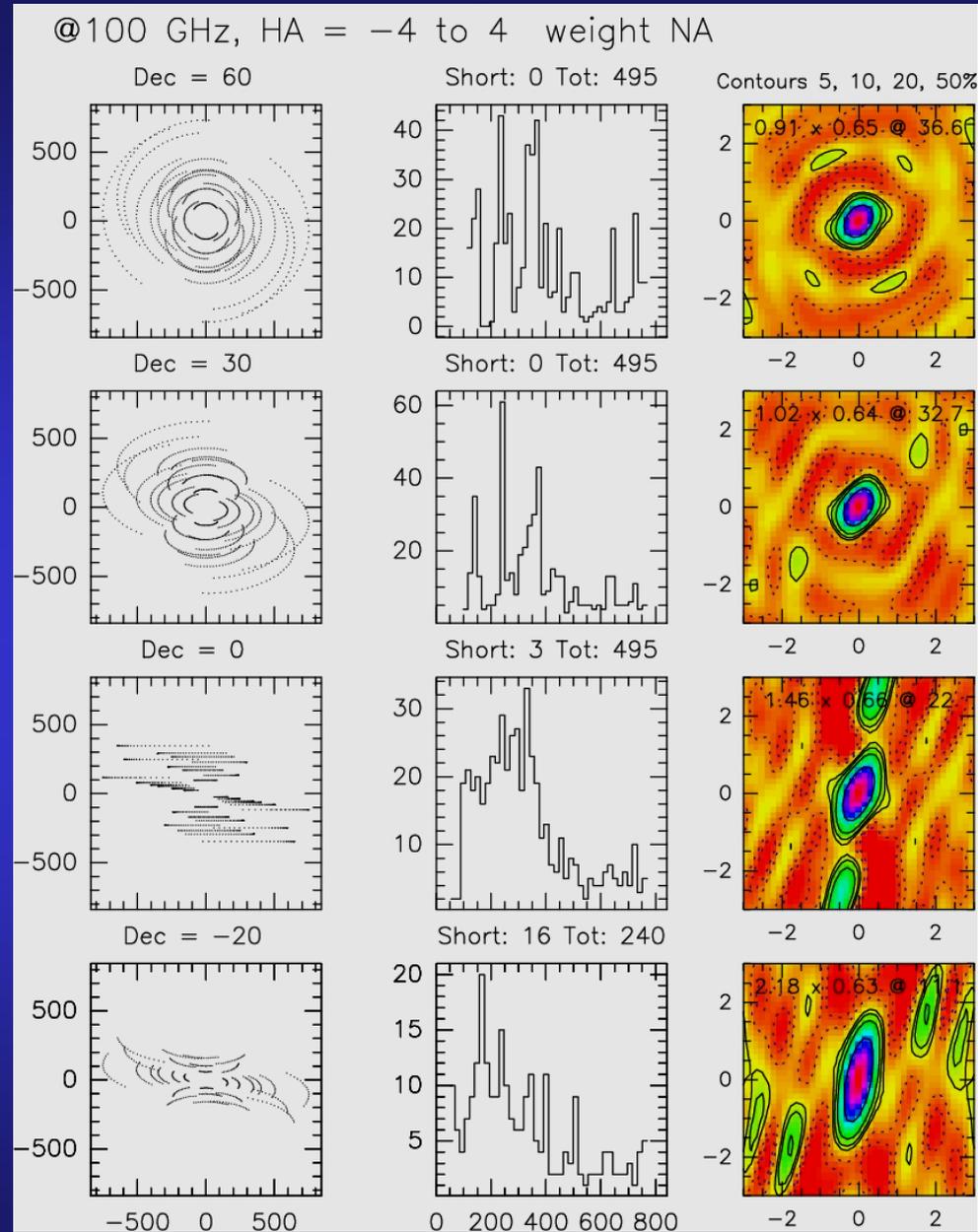
CD configuration

@100 GHz, HA = -4 to 4 weight NA



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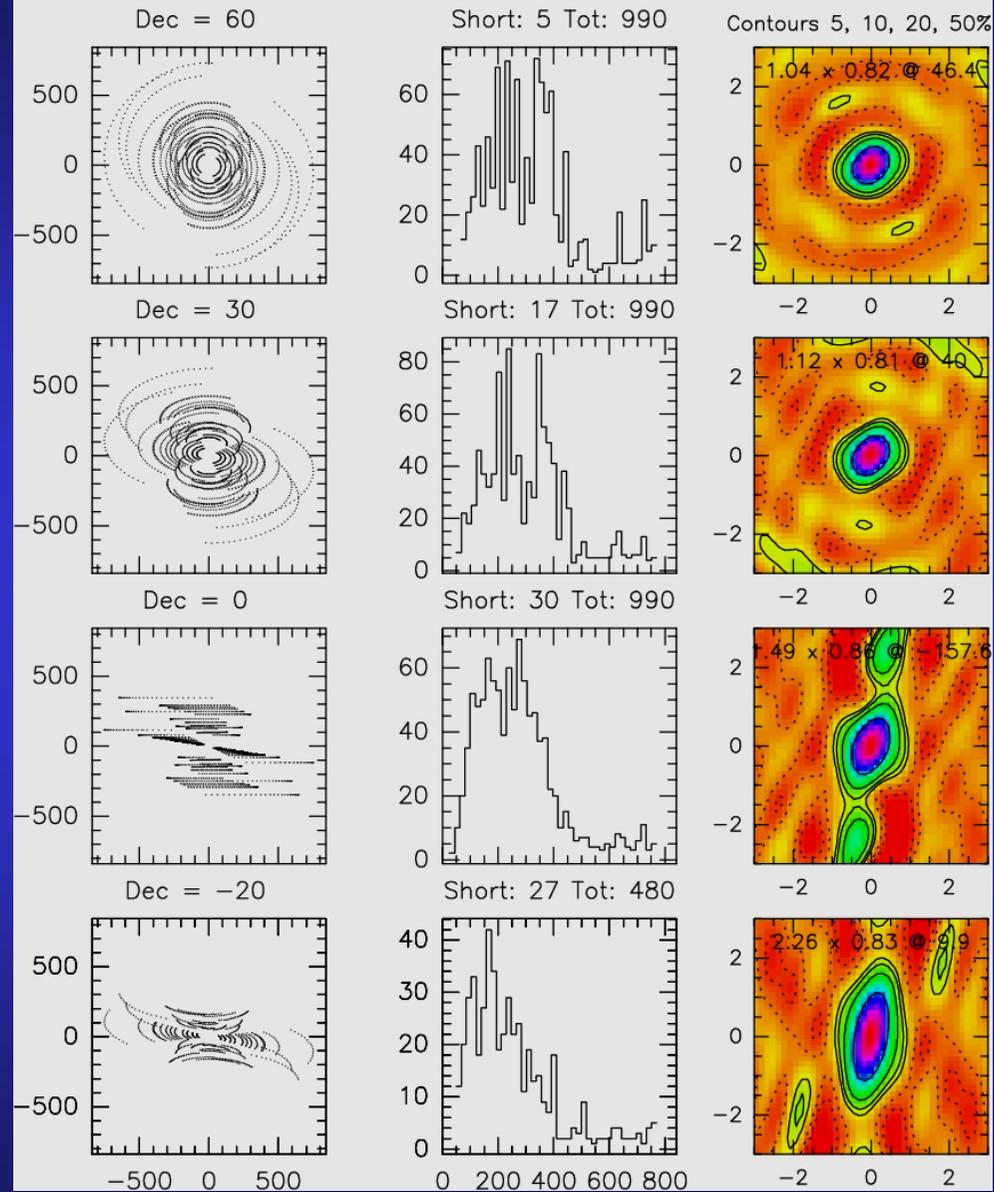
A configuration



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AB configuration

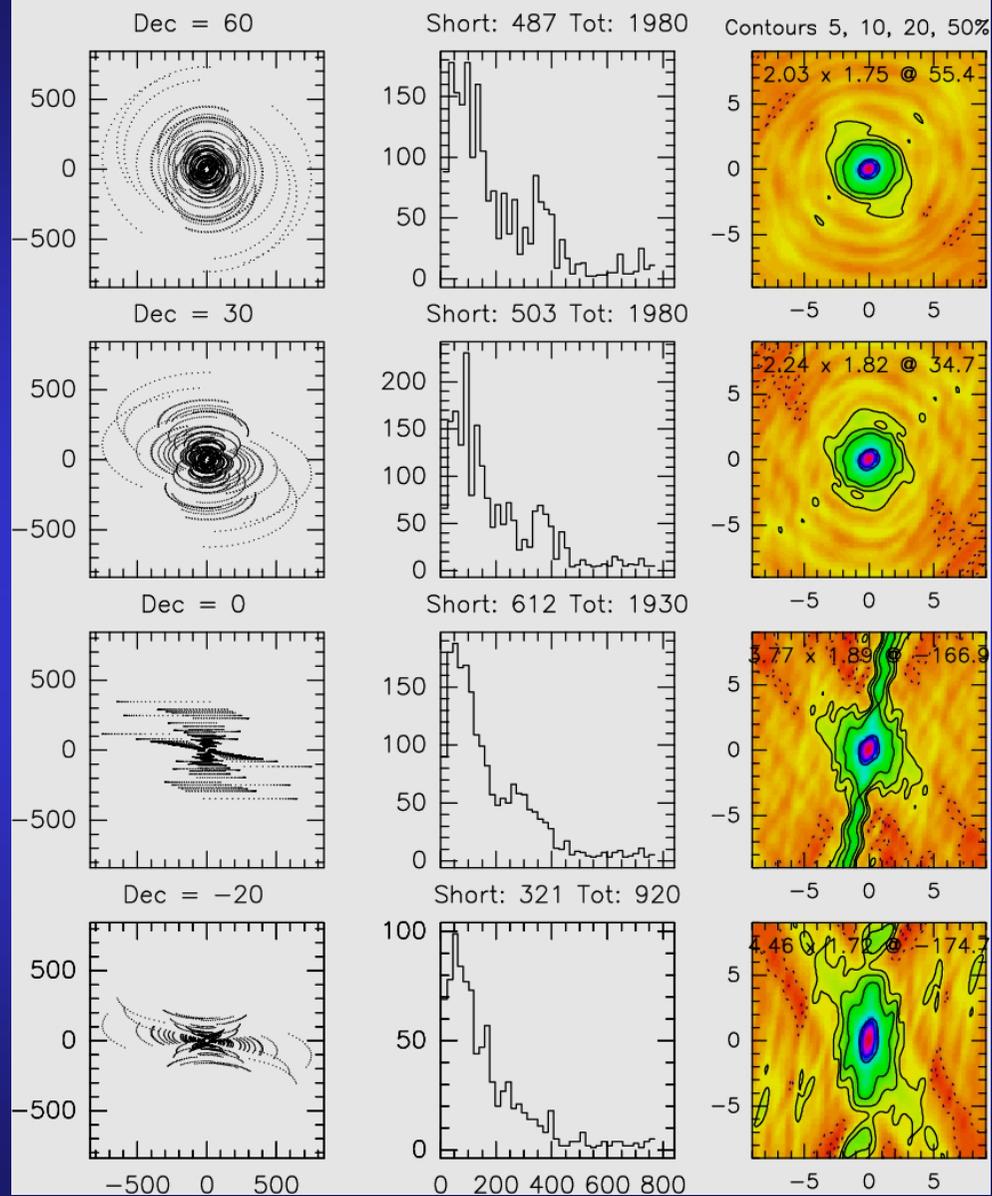
@100 GHz, HA = -4 to 4 weight NA



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ABCD configuration

@100 GHz, HA = -4 to 4 weight NA



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Correlators (I)

Narrow-Band correlator: 8 units, 2x1GHz, spectral resolution 39kHz-2.5MHz



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Correlators (II)

WideX: 4 units, 2x3.6 GHz (dual polar, fixed spectral resolution 2 MHz)

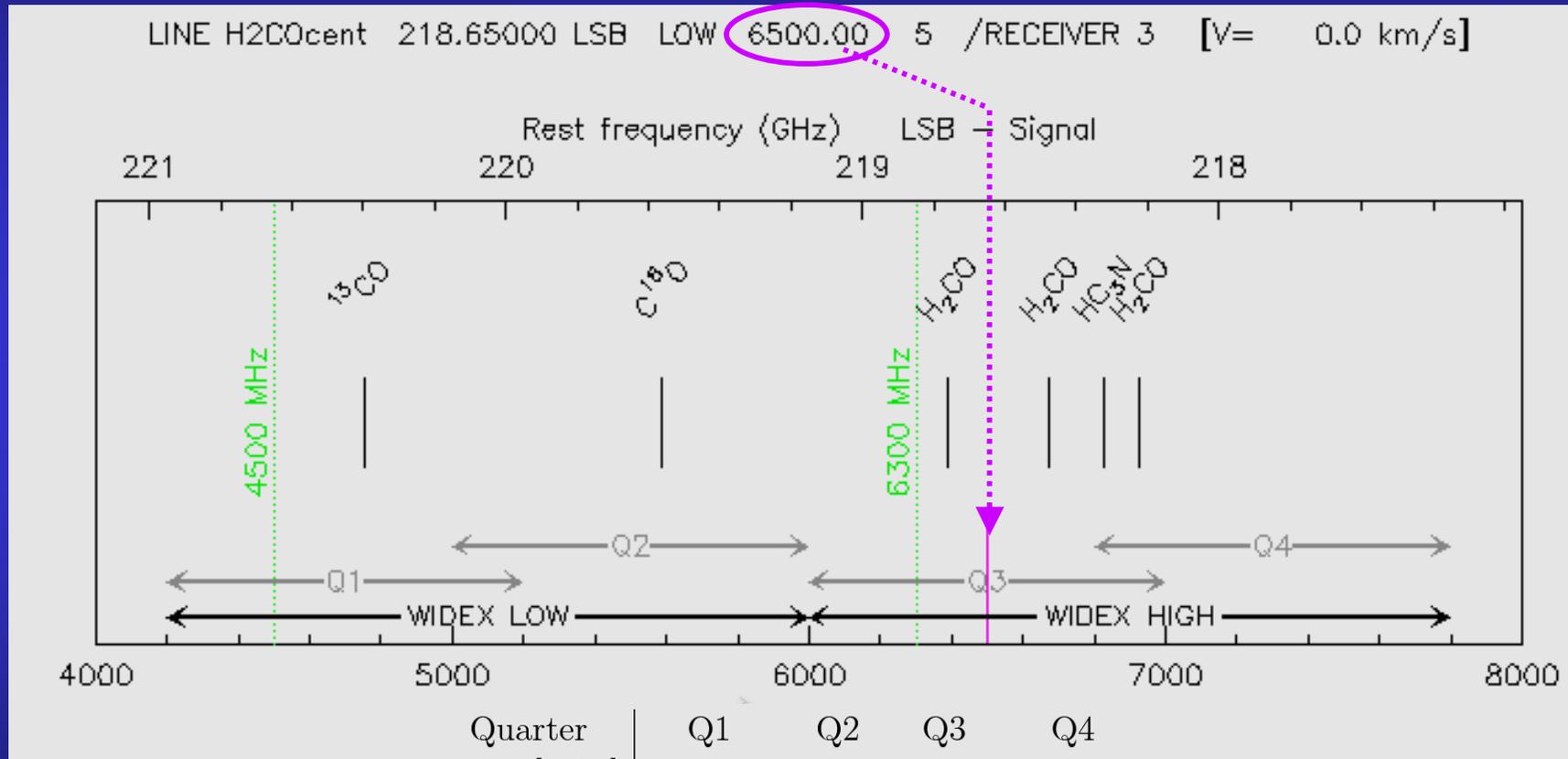


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Spectral settings (I)

•Use the ASTRO command LINE:

ASTRO> LINE H2COcent 218.65 LSB



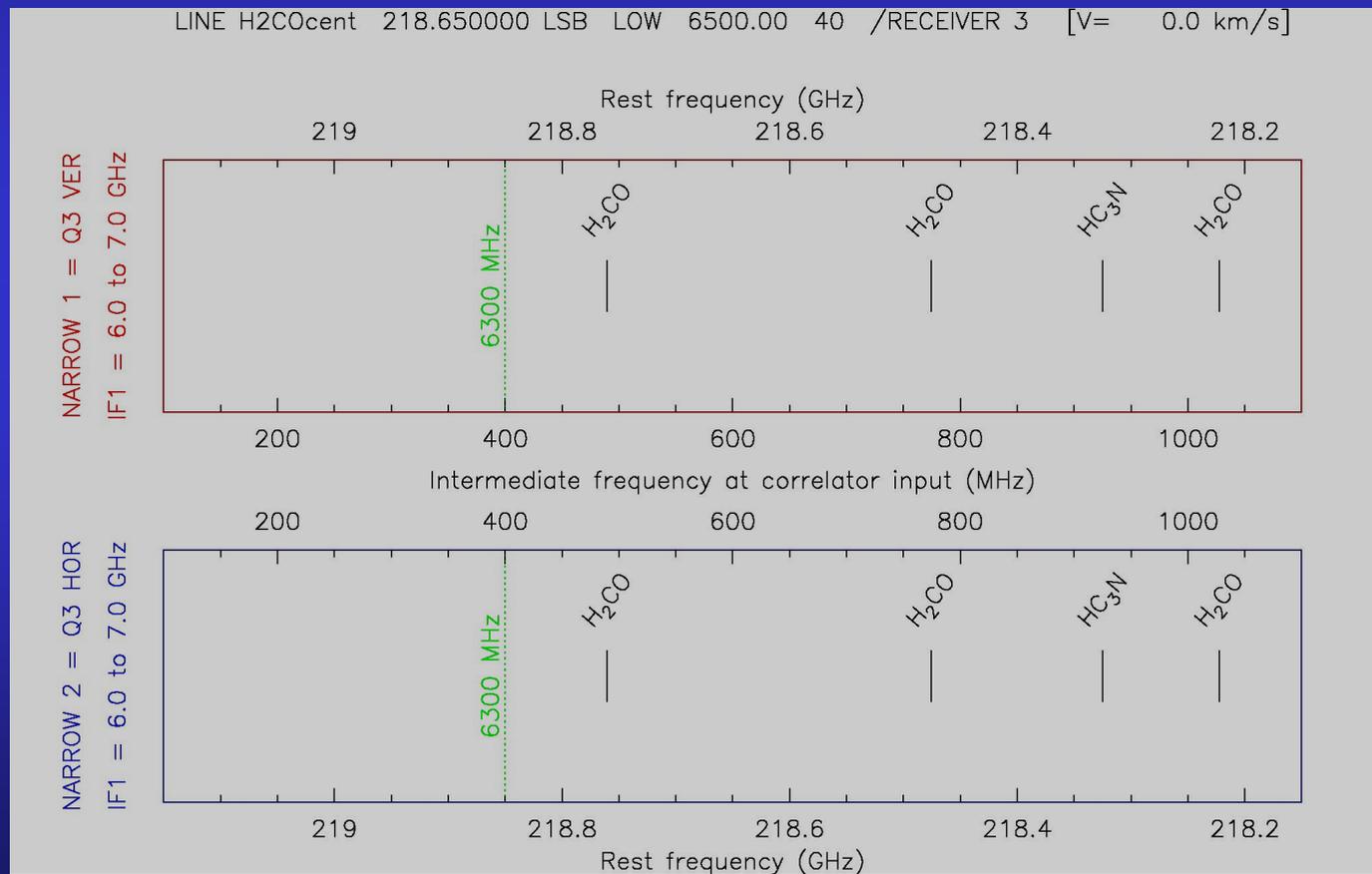
NB:

Quarter	Q1	Q2	Q3	Q4
IF1 [GHz]	4.2 - 5.2	5 - 6	6 - 7	6.8 - 7.8
input 1	HOR	HOR	VER	VER
input 2	VER	VER	HOR	HOR

Spectral settings (II)

- Make use of IF processor and NB correlator flexibility
- NB correlator can process 2 x 1GHz (100MHz to 1100MHz)

ASTRO> NARROW Q3 Q3



Eigth IRAM Millimeter Interferometry School, 15-19 Oct. 2012

NB Correlator Modes

<http://www.iram.fr/IRAMFR/TA/backend/cor6A/index.html>

•Beware of Gibbs

Phenomenon:

(perturbs the central channels in DSB mode)

Avoid line in

subband center

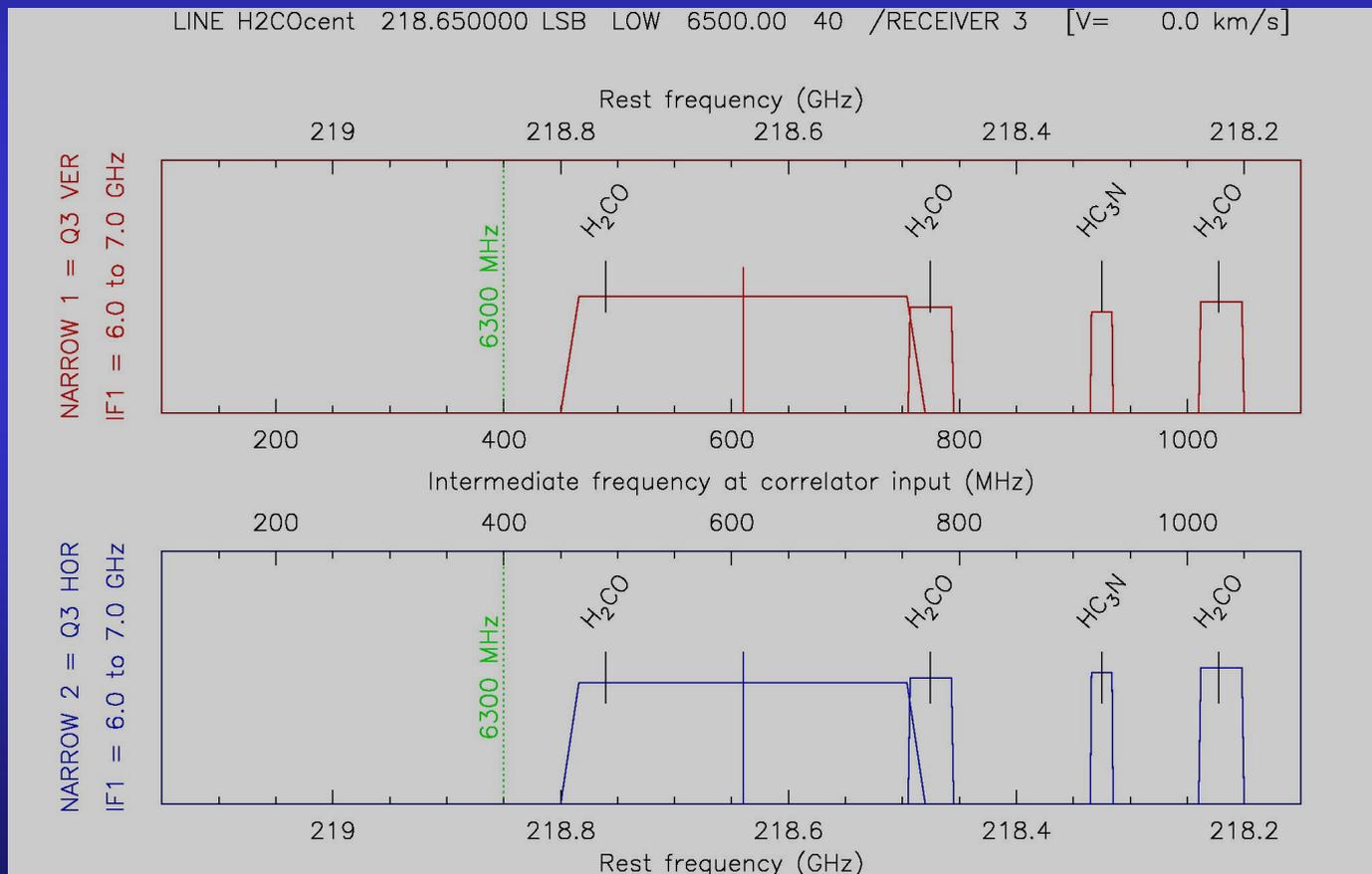
(320, 160, 80)

Bandwidth	Subband	Channels	Spacing
320 MHz	DSB	2 x 64	2.5 MHz
160 MHz	SSB	1 x 128	1.25 MHz
160 MHz	DSB	2 x 128	0.625 MHz
80 MHz	SSB	1 x 256	0.312 MHz
80 MHz	DSB	2 x 256	0.156 MHz
40 MHz	SSB	1 x 512	0.078 MHz
20 MHz	SSB	1 x 512	0.039 MHz

Spectral settings (III)

```

unit BW cent_IF correlator input
Astro> SPECTRAL 1 320 610 /NARROW 1
Astro> SPECTRAL 2 40 775 /NARROW 1
Astro> SPECTRAL 3 20 925 /NARROW 1
Astro> SPECTRAL 4 40 1030 /NARROW 1
  
```



Eighth IRAM Millimeter Interferometry School, 15-19 Oct. 2012

Can my object be observed at any time? (I)

- Watch the IRAM Web or Newsletter for the submission deadlines
 - March deadline: June 1 to November 30
Committee meets 2nd half of April
 - September deadline: December 1 to May 31
Committee meets 2nd half of October
 - Urgent? Submit ToO/DDT proposal (email to ddt@iram.fr)
 - Interested in global 3mm-VLBI observations?
Two sessions per year:
5 days in May, 5 days in October
deadlines: February 1st, August 1st

Can my object be observed at any time? (II)

- Watch out for sun avoidance period (35⁰)

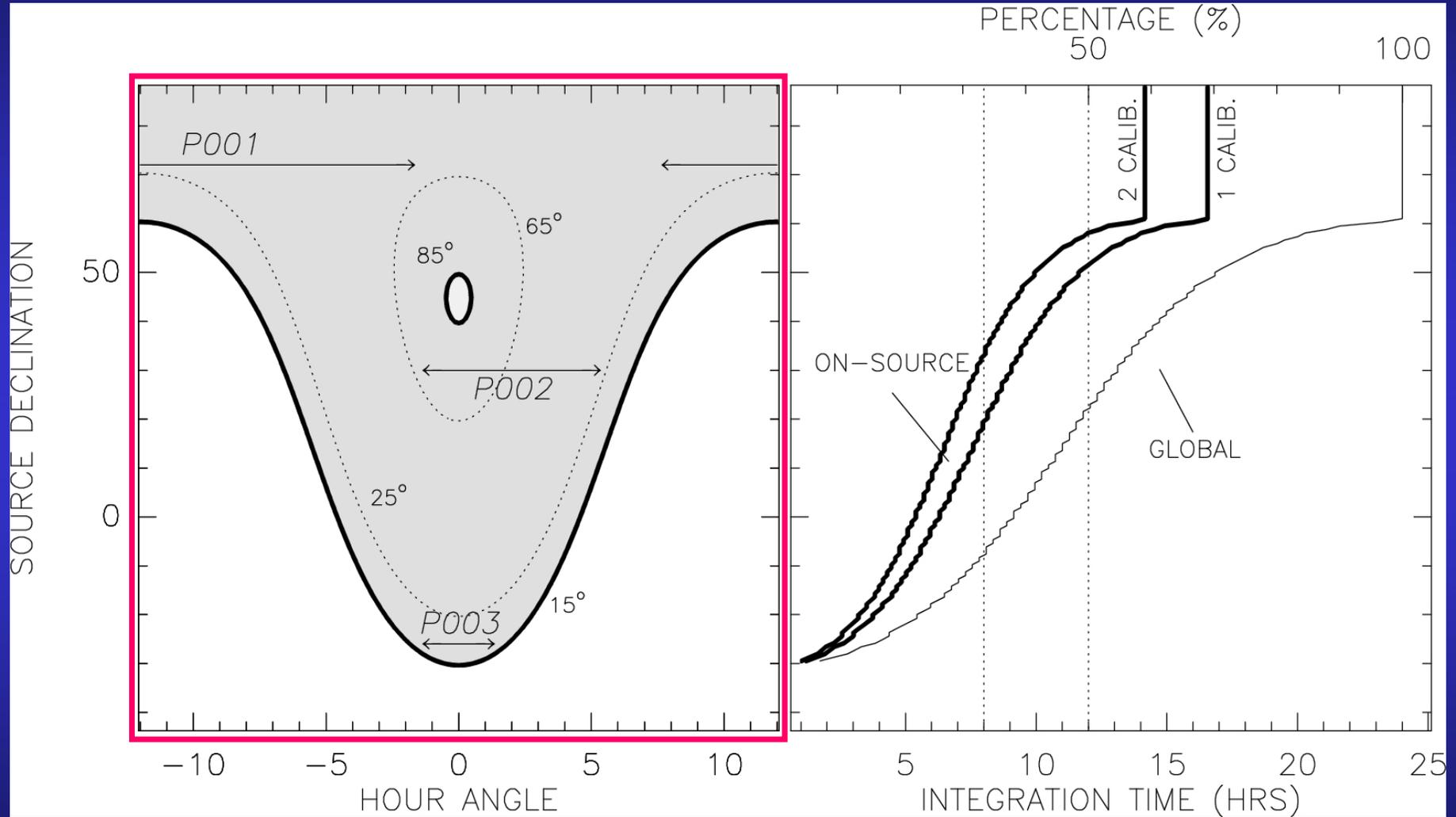
ASTRO> catalogue mysource.sou

ASTRO> horizon /sou

IRC+10216 : Sun distance 61.1 ; avoidance 11-JUL-2013 to 23-SEP-2013

- Self-calibration on strong (300mJy and more) continuum feasible? **Ideal time filler for periods where the atmospheric phase stability is poor!**
- Check declination of the object:
Galactic center is at the very limit

Observing time



Detection

- **Choose compact configuration**
 - **lower phase noise**
 - **source is unresolved: no flux is lost, all baselines are used**
 - **if you have a detection, do not over-interpret it. A 5σ detection is not a map;**
CLEANing is not helpful
 - **weak line on a strong continuum:**
Current limitation on Bure
line/continuum $> 3\%$ (for a 5σ detection)

Mapping/Imaging

- **Single field:**
 - **Do not forget to correct for primary beam attenuation when comparing maps**
- **Mosaics:**
 - **Fully sample the mosaic to be sensitive to large scales**
- **Adding short spacings:**
 - **good calibration required at single dish**
 - **good sensitivity**
 - **should cover at least the field mapped by the interferometer**

(see IRAM Memo 2008-2 by Rodríguez-Fernández, Pety & Gueth)

Other observations

- **Size measurements:**
 - Requires good SNR, not a 5σ detection
 - Compare to point source (calibrator)
- **Position measurements:**
 - absolute astrometric precision $< 0.3''$



Institut de Radioastronomie Millimétrique

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30m telescope | Bure interferometer | Proposals | Research | Travel support | Letters, results and reports | News | Events

Bure interferometer

- Observing schedule
- Archive
- Data reduction
- Documentation
- Contact the SOG



Plateau de Bure interferometer

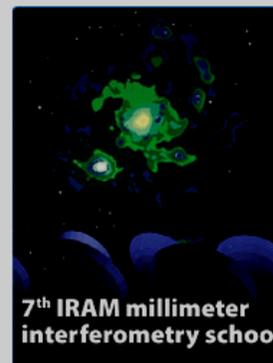
The Plateau de Bure Interferometer (PdBI) is currently the most advanced millimeter array in the world. Situated on the Plateau de Bure at 2550m altitude in the French Alps, the geographical position of its phase center is

Longitude: 05:54:28.5 East, Latitude: 44:38:02.0

During its history, the PdBI underwent several track extensions, received additional antennas (all of 15m diameter and similar construction as the first ones) and technical upgrades. From a three antenna interferometer with a maximum baseline of 288 meters in 1988, it has evolved to a six-antenna array with baselines up to 760 meters in 2005. A new generation of powerful dual-polarisation receivers for the 3mm and 1mm observing bands was installed in 2006, and extended to the 2mm observing band in late 2007.

The antennas of the IRAM interferometer can move on rail tracks up to a maximum separation of 760 m in the E-W direction and 368 m in the N-S direction, corresponding to a resolution of 0.5 arcsecs at an observing wavelength of 1.3 mm (230 GHz).

Since 1990, the interferometer is open to the world-wide scientific community, and issues twice a year a call for observing proposals. Because of its complexity and to make it attractive to the wide community, observations at the PdBI are not performed by the astronomers who propose them, but by the telescope operators and IRAM staff astronomers, who also provide assistance at various stages of the data



7th IRAM millimeter interferometry school



Proposals - Mozilla Firefox

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http://www.iram-institute.org/EN/content-page-57-7-57-0-0-0.html

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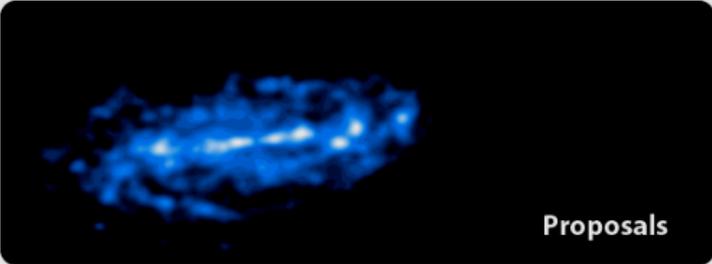
iram Institut de Radioastronomie Millimétrique

About us 30m telescope Bure interferometer Science & technology International cooperation Public outreach **Science users**

30m telescope | Bure interferometer | **Proposals** | Research | Newsletters, results and reports | News | Events

Proposals

- Call for proposals
- Large Program policy
- Director's discretionary time proposals
- Proposal templates
- Preparing proposal submission
- Submitting proposals
- Program committee recommendations

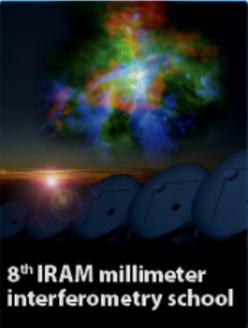


Proposals

Proposals for observations with the IRAM telescopes may be submitted twice per year to the

IRAM Scientific Secretariat
Domaine Universitaire de Grenoble
300, rue de la Piscine
F-38406 St. Martin d'Hères, France

Submission should be made through the [Electronic proposal submission facility](#). The facility is opened about three weeks before a deadline. Submission deadlines are currently around mid of March and mid of September each year for the summer (01 June - 30 November) and winter (01 December - 31 May) scheduling periods. Exact dates and all other relevant information are given in a separate [Call for proposals](#) published on the web and in the [IRAM Newsletter](#) usually about a month ahead of the deadline. Additional detailed technical information can be found on the web pages for the [interferometer](#) and for the [30m telescope](#).





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Applications Places System JM. Winters Tue Oct 9, 5:53 PM

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Calendar

Semester: 01 December 2012 - 31 May 2013

Submission deadline	13 September 2012 at 17:00 CET (UT+2 hours)
Opening of proposal submission facility	Closed now
Program committee meeting	25/26 October 2012
Publication of PC grades	mid November 2012

Non-electronic submission is discouraged, submission by Email is not possible. Shortly after a submission deadline the scientific secretariat sends acknowledgements of receipt to the principal investigators of all proposals received. These receipts are sent by Email and contain the official registration number of the proposal.

Proposals are evaluated at the next meeting of the IRAM program committee and recommendations are made to the IRAM Direction. Proposals are rated A (accepted), B (backup, scheduled under certain favourable conditions), or C (rejected). The program committee has twelve [non-IRAM members](#) plus the ex-officio members: IRAM direction, 30m station manager and 30m scheduler and the coordinator of the interferometer.





This publication describes the NOEMA project as well as the advantages it will bring to radioastronomy. Download the new NOEMA brochure in English or French.



[Home](#) | [Electronic proposal submission](#) | [Proposal forms](#) | [Program committee recommendations](#)

Electronic Proposal Submission

Astronomers who wish to submit a proposal for one of the IRAM telescopes should read the following general information:

- [Preparation of proposal submission](#)
- [Read our response and check your submission](#)
- [Modify a proposal already submitted](#)

Should the electronic submission facility not be available because of poor network connections or other difficulties, please submit your proposal either by postal mail or fax. In case of malfunction, please contact berjaud@iram.fr. Proposals submitted by electronic mail will not be accepted.

Submission Form

- Title of the proposal (max 50 char or you get an Internal Server Error message)
- Full name of the PI E-mail of the sender
- Comments you wish to transmit to the scientific secretariat (optional)

Done

- Preparation of proposal submission
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- Full name of the PI E-mail of the sender
- Comments you wish to transmit to the scientific secretariat (optional)
- Submit this file

or

The title of the proposal has to be identical to the one in the cover page of a submitted LaTeX proposal (plain ascii format, no TeX symbols). The full name of the PI is the last name followed by the first name of the principal investigator. The E-mail address refers to the person who submits the proposal.

Preparation of proposal submission

Proposals must be written on the standard IRAM LaTeX [proposal template](#). No other format, in particular no PostScript version of your proposal will be accepted. At the stage of submission authors will have to be provide one compressed archive file.

This archive file needs to contain the following individual files:

Proposal Forms

A LaTeX style file, [proposal.sty](#), is provided in this directory for preparing IRAM proposals, both for the 30m telescope and the interferometer. To get and save this file, first click on the link, then click "File" and "Save As..." on your browser. Two template files, [prop-30m.tex](#) and [prop-pdb.tex](#) are available as starting points for writing your 30m or interferometer proposals. For the preparation of your proposal, we ask you to follow the [guidelines](#) for the electronic proposal submission.

NOTE: These files have been updated for the next deadline (September 13, 2012 at 17:00 CET (UT+2 hours) for the observing period December 01, 2012 - May 31, 2013); please use the new versions of proposal.sty AND prop-30m.tex or prop-pdb.tex. **Do not mix them with older versions.**



Bure interferometer

- Observing schedule
- Archives
- Data reduction
- Visiting astronomers
 - Visitor Schedule
 - Travel to Grenoble
 - Financial support for visiting astronomers
- Local contacts
- Data publication policies
- Data reduction and analysis software
- Documentation
- Contact the SOG

Local Contacts



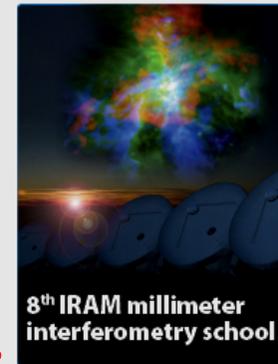
An IRAM staff astronomer is appointed as Local Contact to every A and B rated project without IRAM internal collaborator. He/she will assist you from the beginning to the end of your project should no IRAM astronomer be collaborating with you. Feel free to contact him after you get the project report with the recommendations of the program committee.

The role of the local contact is to help you set up the observing procedures. You should check the source coordinates and offsets for mosaics, the source velocity, the spectral configuration of the correlator and the observing frequencies. The local contact also helps you to arrange your stay in Grenoble and get started with data reduction. He will keep an eye on the data reduction and verify the data quality. His and your feedback are very important to improve on the system.

Note also, that the IRAM interferometer is operated as a service instrument by the IRAM staff. Observations are in general carried out without your presence on the site (in absentee).

Local contacts for the current and previous periods are:

- June 2012 - November 2012
- December 2011 - May 2012
- June 2011 - November 2011
- December 2010 - May 2011





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Data publication policies

The following footnote should appear on the first page of papers based on observations made with the PdBI:

"Based on observations carried out with the IRAM Plateau de Bure Interferometer. IRAM is supported by INSU/CNRS (France), MPG (Germany) and IGN (Spain)."

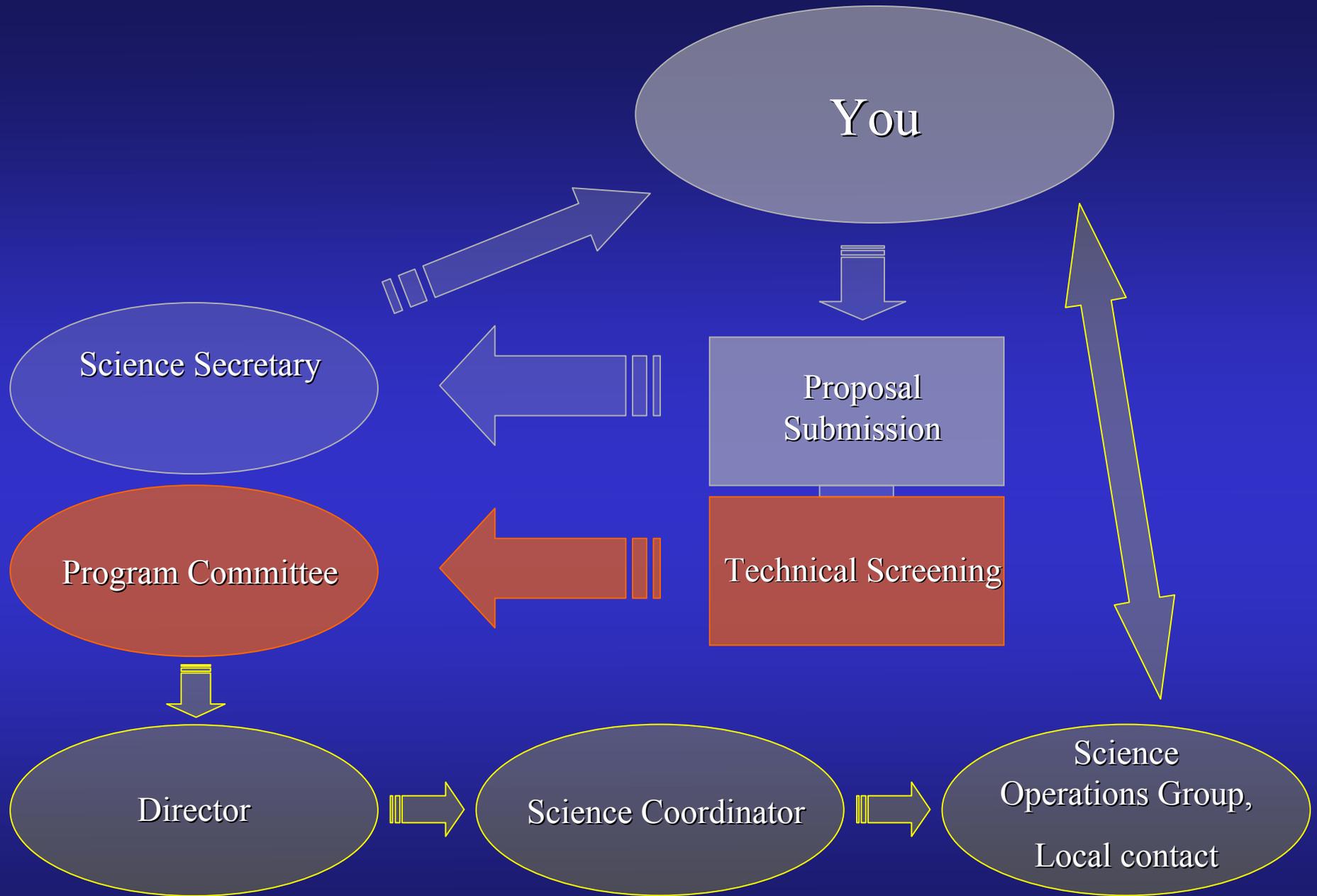
In addition, publications that arise from work supported by the European Community funded RadioNet project should include the following acknowledgement:

"This work has benefited from research funding from the European Community's Seventh Framework Programme."

IRAM welcomes an acknowledgement to the IRAM staff for help provided during the observations and for data reduction.

IRAM provides preprints free of charge for publication based on IRAM observations. Papers which are accepted in refereed journals and addressed to the IRAM librarian will be published as IRAM preprints.





Any questions on how to request time for the Plateau de Bure array?

- **Check the IRAM Web pages**
- **Ask the Science Operations Group
(sog@iram.fr)**

Looking forward to YOUR proposals next March!

