

2012 GISMO ON-Sky Test Plan

S. Leclercq.

This document gathers information useful for the 5th run of the GISMO prototype at the 30m telescope in March.

Other details, updates and daily reports on the Wiki page:

<http://www.iram.es/IRAMES/mainWiki/GoddardIramSuperconductingTwoMillimeterCamera>

People and Hardware

List of list of GISMO visitors and their presence schedule at the telescope

Granada	= Spend the night in the rooms at IRAM Granada (and possibly a travel on the same day to get there)													
Plane	= Travel by plane (coming from the place scheduled for the preceding day)													
	Th	F	Sa	Su	M	Tu	W	Th	F	Sa	Su	M	Tu	
		1-Mar	2-Mar	3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	8-Mar	9-Mar	10-Mar	11-Mar	12-Mar	13-Mar
E. Sharp	GSFC	Granada	Pico Veleta (30m rooms)										Granada	Plane
S. Maher	GSFC	Granada	Pico Veleta (30m rooms)										Granada	Plane
D. Fixen	GSFC	Granada	Pico Veleta (30m rooms)						Granada	Plane				
J. Staguhn	GSFC				Granada	Pico Veleta (30m rooms)							Granada	Plane
A. Kovacs	GSFC				Granada	Pico Veleta (30m rooms)							Granada	Plane
S. Leclercq	IRAM				Granada	Pico Veleta (30m rooms)							Plane	
# visitors at the 30m		0	3	3	3	6	6	6	5	5	5	5	0	0
Planning			Workshop	Mount	Cooldown	Tests	Up in cabi	Observations: 20 hours total on sky					warm & shutdown	

4 rooms available at the 30m telescope for the GISMO staff → need to share some rooms (2 separate beds will be installed in those rooms). Organization of the room sharing will be decided in discussion with the GISMO team at the telescope. 2 rooms at the Granada office may be used on demand to minimize sharing at the telescope.

Contact and phone list:

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Javier Lobato (organization in Spain)

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Detectors

Final version of GISMO: same 8x16 pixels as 2nd to 4th runs, working at 2mm (the -3dB window is 140-162 GHz), with an individual pixel size = $0.9 F\lambda$.

New updates: new cold baffle, new and final position in the receiver cabin, new warm optics.

List of material that will be send at the 30m

Cold baffle and attached optics, computers & electronics. All the GISMO parts are at the telescope since Feb 27 2012.

Fluids supplies

- IN_2 : 200 liters March 1st, more possible later (consumption of 30 l/day foreseen).
- lHe : ? liters (same as previous runs).
- Compress air line in the receiver cabin ?

Planning of the test run

On the telescope schedule (<http://www.iram.fr/IRAMFR/PV/sche/12/s09v1.html>) the use of telescope time by GISMO is not specified; the reason is to give some flexibility: GISMO will take telescope time when needed on the heterodyne pool (project 440-11).

Goal of the run: install GISMO at its permanent position with its final optical setup, test everything works as anticipated.

Johannes' remarks, test plan and justification about requested time:

1. with the extension dewar, we see no other possibility than to mount gismo at its new position in the receiver cabin, attach the new extension dewar, and then pump on it in the receiver cabin.

2. test plan: as you will see, we anticipate that we will need almost 60 hours to really characterize the instrument sufficiently (w/o overheads, only a few of the following points really seem debatable if we want to guarantee GISMO's readiness for April):

1. alignment: optical, 2 hours
2. alignment: radio 3 hrs
3. verify neutral density filter needs 1 hr
4. spillover characterization 2 hrs
5. initial x-y-z focus& beam map 1hr

6. verify and debug astrometrical parameter exchange with 30m control system by using different offsets, etc. (depending on needed debugging needs) 1-5 hrs
7. beam map in order to determine the pixel position and plate scale 2 hrs
8. complete focus model (at different elevations) each elev 1 hour -> 5-7 hrs
9. beam maps at different elevations 1 hr per elevation: 5-6 hrs
10. pointing model 5 hours
11. demonstrate noise integration with smallest Lissajous pattern down to confusion limit (we assume NEFD $10\text{mJy s}^{0.5}$, confusion limit: 50 microJy): 11 hrs.
12. primary calibration (counts vs flux) on major calibrators (planets) 3hrs.
13. primary calibration factor for different neutral density settings: 2 hrs.
14. measure secondary calibrators vs primary calibrators (galactic sources, incl. compact HII regions, major solar system moons (in order to calibrate their temperature) .25 hrs/calibrators, total 2-3 hrs.
15. empirical verification of sensitivity vs scan patterns for future time estimator. per scan pattern 0.5 hrs per scan pattern, total 6 hrs total.
16. It would be desirable to have an addtl. overhead of 20% on these numbers (~ 12 hrs)

IRAM's reply: we can give ~20 hrs on sky => some elements of Johannes's tests will have to be tested during the April session.

More information (alignment, performance test, interfacing with the telescope, PaKo, sources, see previous runs test plans and Wiki page of this run).