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Deliverable D18.1

Providing access of 46 (PdBI) and 153 (PV) hours to the IRAM infrastructure

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Deliverable Leading Partner: Institut de Radioastronomie Millimetrique INSTITUT DE RADIOASTRONOMIE MILLIMETRIQUE INSTITUT DE RADIO ASTRONOMIE MILLIMETRIQUE SOCIETE CIVILE* I.R.A.M.

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SEVENTH FRAMEWORK PROGRAMME

1 Document information

Document name:	Providing access of 373 (PdBI) and 822.10 (PV) hours to the infrastructure TNA IRAM in the period 01/01/2012-30/11/2012.
Type	Other
WP	18
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1.1 Dissemination Level

Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

1.2 Content

2 Description of the TNA deliverable

2.1 Information about the TNA – IRAM-PdBI

The Plateau de Bure Interferometer (PdBI) started in 1990 as a 3-element array. It is located in the French Alps, near Gap, at an altitude of 2550m. Since then, 3 more 15-m diameter antennas have been added, and today all 6 telescopes are equipped with low-noise heterodyne receivers for the 3mm, 2mm, 1mm and 0.8mm atmospheric windows. The SSB receivers provide a contiguous bandwidth of 4 GHz in each polarization. There is at present no other interferometer on the northern hemisphere that offers the same sensitivity at these wavelengths. With baselines up to 768 meters (in the East-West direction), it allows sensitive imaging at sub-arcsecond resolution (0.2-0.3 arcseconds at 1.2mm wavelength). The signals from the 6 antennas are processed by two IRAM-developed digital correlators, which allow a large variety of observing modes and the possibility to phase up all 6 antennas for VLBI experiments. Global VLBI experiments at 3mm wavelength together with the American VLBA and a number of European telescopes are performed twice a year. VLBI observations at 1.3mm were performed with the IRAM 30m telescope (PV), and in the longer term experiments are planned that also use the ALMA antennas in Chile.

A major upgrade is currently underway. It will transform the Plateau de Bure Interferometer into a new qualitatively different and much more powerful instrument: the NOEMA interferometer. The project consists in doubling the number of 15m antennas (from 6 to 12), increasing the total IF of the receivers from 8 to 32GHz, and extending the East-West baseline from 0.8 to 1.6 km. The first NOEMA antenna, the construction of which is underway, is scheduled to start astronomical operation in the summer of 2014. Together with the IRAM 30m telescope, the proposed enhancement will provide the scientific community full access to all of the millimeter windows, from about 70 to 375 GHz, in the northern hemisphere, with a unique combination of two complementary facilities.

2.2 Information about the provided access to IRAM-PdBI (01/01/2012-30/11/2012)

In the reporting period Jan 01, 2012 to Nov 30, 2012, a total of 216 proposals were under consideration for observations with the Plateau de Bure Interferometer. The weight on extragalactic science was slightly higher than galactic science. From these proposals, the Program Committee recommended 23 RadioNet eligible proposals on the basis of scientific merit. In total, 17 RadioNet eligible proposals (73%) were considered at the Plateau de Bure Interferometer during the reporting period. Because of the large number of hours of some project, it has not been possible to meet the minimum quota of at least 19 projects in the period from Jan 01, 2012 to Nov 30, 2012, and therefore be in adequacy with the Description of Work (Annex I).

The total observing time allocated to these proposals corresponds to 373 hours. The list of recommended eligible projects for which time was allocated and the associated number of observing hours are listed in the table below.

Project acronym	Name (institute) of the TNA user group leader	Number of the TNA users	Provided access [hours]
Provided access to the IRAM – PdBI:			
T0C5	Roberto Maiolino (INAF, IT)	3	16
V008	Jonathan Henshaw (Leeds Univ, UK)	3	24
V02C	Monica Orienti (INAF, IT)	3	10
V05B	Magnus Persson (Univ. Copenhagen, DK)	4	16
V064	Ewine van Dishoeck (Leiden Univ, NL)	5	32
V06C	Agnes Kospal (Leiden Univ., NL)	4	8
V086	Susanne Aalto (OSO, SE)	4	24
V08A	Viviana Casasola (INAF, IT)	7	16
V09D	Mark Swinbank (ICC, UK)	4	13
V0A2	Ian Smail (ICC, UK)	13	24
V0B3	Roberto Maiolino (INAF, IT)	8	24
W00A	Magnus Persson (Univ. Copenhagen, Denmark)	5	6
W03F	Mark Swinbank (ICC, UK)	6	30
W045	Giulia Rodighiero, (Uni. Padova, Italy)	9	37
W046	Helmut Dannerbauer, (Univ. Wien, AT)	6	32
W04C	Scott Chapman (IAC, UK)	3	8
W05A	Rob Ivison (ROE, UK)	7	53
PROJECTS: 17		**USERS: 94**	**ACCESS: 373h**

The detailed information about the committee providing access, projects and selection is given in the TNA database of the 1st periodical report (SESAM).

2.3 Information about the financial EC contribution to the travel to IRAM-PdBI

The table below provides the estimated amounts of reimbursement for travel costs incurred in the reporting period Jan 01, 2012 to Nov 30, 2012 by users eligible for RadioNet support. Because of budget limitations in the reporting period, it was decided for users of the Plateau de Bure interferometer to limit the TNA reimbursements to the travelling or accommodation

expenses only. The travel budget is allocated by the RadioNet3 beneficiary No. 5 (JIVE). Therefore, the exact numbers will be presented by JIVE at the 1st periodic report.

Project acronym	Person name (institute)	EC travel support [€]
V08A	Viviana Casasola (INAF, IT)	432.94
V008	Francesco Fontani (INAF, IT)	237.41
V0B3	Simona Gallerani (Scuola Normale Superiore, Pisa, IT)	318.00
V02C	Monica Orienti (INAF, IT)	232.98
V06C	Agnes Kospal (Leiden Univ., NL)	329.35
TOTAL estimated EC contribution		(1328.74**€**)

2.4 Information about the TNA IRAM-PV

The 30-m telescope, located at an altitude of nearly 3000m on the Pico Veleta in the Spanish Sierra Nevada, has been designed with a surface accuracy and a pointing capability for observations in the atmospheric windows at 3, 2 and 1 mm. Occasionally the telescope is even used at 0.8 mm during particularly favorable atmospheric conditions.

While other telescopes exist in Europe that can observe in the 3mm atmospheric window, e.g. the 100m telescope in Germany, the Onsala telescope in Sweden, and the Metsahovi telescope in Finland, and while European groups operate (sub-)mm-telescopes like APEX in Chile, the IRAM 30m telescope is by far the most sensitive in its wavelength range. It offers unique observing capabilities through the simultaneous availability of several low-noise heterodyne receivers (EMIR), a 18-channel heterodyne array (HERA) and a 2mm bolometer camera with 128 closed-packed pixels (GISMO). The heterodyne receivers can be connected to a variety of analogue and digital backends that allow spectroscopic studies at resolutions between 3.3 KHz and 4 MHz. One of the backends (XPOL) is capable of making cross correlations, a feature which is used for polarization observations.

The telescope is also equipped with a Mark IV VLBI terminal, and VLBI experiments at 3, 2 and 1.3mm wavelengths have successfully been carried out in recent years. By combining the 30m telescope with the 15m diameter antennas on the Plateau de Bure Observatory, it has indeed been possible to detect for the first time fringes with high signal/noise ratio in a VLBI experiment at 1.3mm. The 30-m telescope is also very well suited and often used for complementing interferometer maps with short spacing information.

2.5 Information about the provided access to IRAM-PV (01/01/2012-30/11/2012)

In the reporting period Jan 01, 2012 to Nov 30, 2012, a total of 251 proposals were under consideration for observations with the IRAM 30-meter telescope. The weight between extragalactic and galactic science was well balanced. From these proposals, the Program Committee recommended 31 RadioNet eligible proposals on the basis of scientific merit. Because of the large number of hours of some project, it has not been possible to meet the minimum quota of at least 40 projects in the period from Jan 01, 2012 to Nov 30, 2012, and therefore be in adequacy with the Description of Work (Annex I).

The total observing time allocated to eligible proposals corresponds to 822.10 hours. The list of recommended eligible projects for which time was allocated and the associated number of observing hours are listed in the table below. Note that projects observed during the period 10-24 January 2012, were scheduled during an observing “pool” to optimize the scheduling

of observations and the use of the telescope. Pooled observations are offered since 2002 and have by now proven to be a very successful mode of observations.

Project acronym	Name (institute) of the TNA user group leader	Number of the TNA users	Provided access [hours]
Provided access to the IRAM-PV			
199-11	Kyle Westall (Kapteyn Institute, NL)	5	33
203-11	Estelle Bayet (Oxford Univ,, UK)	5	16
204-11	Estelle Bayet (Oxford Univ., UK)	2	13.3
224-11	Francesco Costagliola (Onsala Obs., SE)	5	18.2
226-11	Willem Baan (Astron, NL)	3	33.2
233-11	Alastair Edge, (Durham Univ, UK).	5	4.7
246-11	Gianfranco de Zotti, (INAF, IT)	16	17.4
252-11	Paul van der Werf (Leiden Obs, NL).	16	40.6
046-12	Sergio Martin (ESO, DE)	4	30.9
054-12	Flor Allaert (Ghent Univ, BE)	4	7.6
059-12	Nicolas Brassington (HertfordshireUniv, UK)	3	10.3
085-12	Alastair Edge (Durham Univ, UK).	5	3.9
183-11	Martin Groenewegen (ROB, BE)	1	25
231-11	Estelle Bayet (Oxford Univ, UK)	3	33
201-11	Susanne Aalto (Onsala Obs., SE)	3	13.5
181-11	Alvaro Sanchez-Moge (INAF, IT)	5	42.5
186-11	Nick Cox (KULeuven, BE)	5	21
230-11	Estelle Bayet (Oxford Univ., UK)	3	48.5
152-11	Francesco Fontani (INAF, IT)	5	28
150-11	Luca Bizzocchi (CAAUL, PT)	5	18
220-11	Marco Grossi (CAAUL, PT)	13	10
177-11	Magnus Persson (Univ. Copenhagen, DN)	5	30.5
094-12	Georgios Magdis (Oxford Univ., UK)	7	63.5
260-11	Agnes Kospal (Leiden Obs., NL)	4	33
075-12	Marco Grossi (CAAUL, Portugal)	16	25
010-12	Luca Bizzocchi (CAAUL, PT)	4	23
042-12	Leon Decin (KU Leuven, BE)	3	56.5
057-12	Selcuk Topal (Oxford Univ., UK)	8	20
025-12	Jonathan Henshaw (Univ. Leeds, UK)	3	28
095-12	Wim Ubachs (Amsterdam Univ., NL)	2	30
035-12	Ricardo Cesaroni (INAF, IT)	9	44
PROJECTS **31**		USERS **177**	ACCESS **822.10**

The detailed information about the committee providing access, projects and selection is given in the TNA database of the 1st periodic report (SESAM).

2.6 Information about the financial EC contribution to the travel to IRAM-PV

The table below provides the estimated amounts of reimbursement for travel costs incurred in the reporting period Jan 01, 2012 to Nov 30, 2012 by users eligible for RadioNet support. Because of budget limitations in the reporting period, it was decided for users of the 30-meter telescope to limit the TNA reimbursements to the travelling expenses only.

The travel budget is allocated by the RadioNet3 beneficiary No. 5 (JIVE). Therefore, the exact numbers will be presented by JIVE at the 1st periodic report.

Project acronym	Person name (institute)	EC travel support [€]
150-11	Luca Bizzocchi (CAAUL, Portugal)	227.04
181-11	Alvaro Sanchez-Monge (INAF, Italy)	618.85
260-11	Agnes Kospal (Leiden Univ., the Netherlands)	290.93
057-12	Ferhart Fikri Özeren (Erciyes Univ, Turkey)	546.00
075-12	Luca Bizzocchi (CAAUL, Portugal)	186.81
TOTAL estimated EC contribution		(1869.63€)