Call for Proposals on IRAM Telescopes

The deadline for submission of observing proposals on IRAM telescopes, both the NOEMA interferometer and the 30-meter telescope, covering the scheduling period 1 December 2020 to 31 May 2021, is

10 September 2020, 17:00 CEST (UT + 2 hours)

IRAM proposals should be submitted through the ***P**roposal **M**anagement **S**ystem* (**PMS**) at URL:

http://oms.iram.fr/pms/

PMS provides on-screen instructions to guide the proposal editor through the submission process. The procedure consists in filling in an on-line form with the details of the requested observations (source coordinates, receiver setups, array configuration, etc.), and to upload a single file in pdf format containing the scientific and technical justification. A LaTeX template is provided from the PMS submission page for your convenience. This file may be customized, or the pdf file can be generated with another software, but in any case **proposers should respect the following requirements**: (1) A normal proposal may contain up to two pages of text describing the scientific aims and the technical justification (4 pages for a Large Program, see below) (2) up to two pages of figures, tables, and references may be added, but the text may not be mixed with figures, tables, and references, and (3) the font size must be 11pt.

For a proposal to be complete, PMS requires that all authors validate their identity (e–mail and affiliation) and their participation to the proposal before the deadline. The editor of the proposal will have to send invitations to all authors through PMS by clicking an *invitation* button. We urge proposal editors to invite the authors through PMS well before the deadline to give them enough time to validate their identity before the deadline. Authors that fail to validate their participation will automatically be dropped from the proposal.

PMS will be opened for submission of new proposals about two to three weeks before the deadline[1]. Proposers may modify their proposals in PMS until the deadline, in which case the *submit* button must be activated again after modification of the proposal. Please avoid last minute submissions when the network could be congested. If you experience any difficulty with the submission process in PMS, please contact us at `pms-feedback@iram.fr` for help. You may also use this e–mail address for bug reports, general questions and comments.

Detailed information on time estimates, special observing modes, technical information and references for both the NOEMA interferometer and the 30-meter telescope can be found on the IRAM web site under the `science users` tab:

`http://www.iram-institute.org/EN/`

Proposers are encouraged to use the CDS (*Centre de Données astronomiques de Strasbourg*) to check whether a source has already been observed at the 30-meter telescope or the NOEMA interferometer. We recommend to use the `VizieR Catalogue Service` to query[2] the header data of IRAM observations obtained since September 2009 for the 30-meter telescope, and since December 1991 for PdBI/NOEMA.

The large guaranteed-time (GT) programs with NIKA2 and the large MPG-IRAM Observatory Programs (MIOP) are run with special source protection. The NIKA2 GT programs are fenced for the 2mm and 1mm bands against new continuum mapping projects at the 30-meter telescope or continuum driven projects at NOEMA. Similarly, all MIOP observing fields are protected against any new observing requests for which the science goals reproduce in large parts those of the respective MIOP. Proposal abstracts and source lists are available on the `NIKA2 home page` and the `MIOP home page`.

We encourage the submission of `Large Observing Programs` (LPs) that require more than 100 hours of observing time and that address strategic scientific issues, using NOEMA or the 30-meter telescope with EMIR. However, as a significant investment of technical time is still needed for the NOEMA project and a large number of GTO programs are already running at NOEMA, restrictions in terms of available

[1] PMS remains open at all times for submission of Director Discretionary Time proposals.
[2] search *IRAM* as catalogue name.

observing time for NOEMA LPs will apply for the upcoming winter semester 2020, similar to the previous observing semesters. You may consult the `Large Program Policy` on the `IRAM web site` for further details.

The 30-meter telescope will be open for 3 mm and 1 mm VLBI proposals. A VLBI participation of NOEMA is anticipated at these frequency bands for the upcoming winter semester.

Publications resulting from NOEMA or 30-meter telescope observations should mention this in an acknowledgment "Based on observations carried out under project number XYYZZ [XXX-YY] with the IRAM NOEMA Interferometer [30-meter telescope]. IRAM is supported by INSU/CNRS (France), MPG (Germany) and IGN (Spain)". IRAM welcomes an acknowledgment to the IRAM staff for help provided during the observations and for data reduction.

C. Kramer & M. Krips

The 30-meter Telescope

What is new?

Due to the COVID-19 pandemic and the measures taken in the European Union and, in particular, in Spain, the telescope had to be closed for 3 weeks in March followed by 4 weeks during which only night time observations were possible. Since mid May, the 30-meter is again operating 24 hours. Unfinished and high-rated projects have exceptionally been carried over from the winter semester into the running summer semester. Since April all observations have been carried out in remote mode. A new remote user guide is available via the following link for internal users or on request.

As one measure to secure the continuing performance of the observatory, the cladding of the pedestal of the 30-meter telescope will be replaced during 3 weeks in August. During this period, only night-time observations will be possible.

A new release of the `PIIC/GILDAS` software for NIKA-2 is available to the users together with the calibration files of all science runs since October 2017, and a concise cookbook. Information on the optimum scanning strategies, and the optimum size of maps recommended by IRAM, is given in the updated document on the 30m capabilities.

A commissioning report on the NIKA-2 1 mm polarimetry mode is currently in preparation and shall form the base for a science verification week before the end of 2020. For the upcoming winter semester, the polarimetry mode is however not yet offered to the community.

Main capabilities for the 30-meter telescope offered in the current call:

Proposals for two frontends will be considered for the coming semester:

1. NIKA2, a continuum camera working simultaneously at 1.15 and 2 mm with a field-of-view of 6.5′,
2. EMIR, offering four bands at 3, 2, 1.3, and 0.9 mm wavelengths in both polarisations, and
3. HERA (see comment below), the 9 pixel dual–polarization heterodyne receiver array operating at 1.3 mm wavelength.

IRAM plans to de-commission HERA at some point after the upcoming winter semester. It is recommended to make use of that semester in particular to wrap-up unfinished observing projects which require HERA.

The two heterodyne frontends EMIR and HERA can be connected to a suite of narrow- and broad-band spectrometers with resolutions ranging from 3.3 kHz to 2 MHz, and bandwidths of up to 32 GHz.

During the winter semester emphasis will be put on observations at the shorter wavelengths but 3 mm proposals are also encouraged, particularly if they are suited for medium or low quality weather backup. Projects with sources in the LST range 10-14 and 22-23 have a higher chance of being observed as, in particular, the LST ranges of Orion/Taurus and of the Galactic Center region are usually much over subscribed. We plan to offer several weeks of pooled observations in order to optimize the use of the telescope. Proposers are requested to use the EMIR and HERA time estimators which are available online via the `IRAM 30-meter telescope webpage`.

NIKA2 projects will be observed in one-week blocks of pooled observations. Proposers are requested to use the NIKA2 time estimator python script which is available online via the `NIKA2 home page`. Sensitivities are unchanged. The `PIIC/GILDAS` software is used for the online on-the-fly quick view data reduction and is also available for offline data reduction. To ensure an efficient use of telescope time in cases where weather conditions are not suitable for NIKA 2 observations, pool observers may be requested to support EMIR 3mm backup projects.

An updated version of 30-meter capabilities document is available on the `Call for Proposals` page.

C. Kramer & M. Sanchez Portal

The NOEMA Interferometer

What is new?

Scientific observations at NOEMA were maintained at a high efficiency level since the beginning of the COVID-19 health crisis in March this year, even during the lockdown period in France. The pandemic did, however, delay by about one to two months the completion and commissioning of Antenna 11, and antenna retrofit and maintenance activities. Antenna 11 will join the array for commissioning around mid-August. The retrofit on two additional first generation antennas and the standard antenna maintenance, initially planned to start in April, are expected to be completed by the end of the current summer observing semester. Full NOEMA with 12 antennas and baselines ranging up to ∼1700 m is still foreseen to be available by the end of 2021.

Main capabilities for NOEMA offered in the current Call:

Correlator: The wide-band correlator *PolyFiX* processes an instantaneous bandwidth of 31 GHz that is distributed over two 7.744 GHz wide sidebands and two orthogonal linear polarisations for a default channel spacing of 2 MHz. Additionally, a large number of high spectral resolution windows with channel spacings of 62.5 kHz can be defined within each sideband and polarisation (for more details please see the dedicated Section on *PolyFiX* in the document on the `current status of NOEMA`).

Bands: Bands 1 (λ≈3mm), 2 (λ≈2mm) and 3 (λ≈1mm) will be available for this Call, while band 4 (λ≈0.8mm) will not be offered. The nominal sky frequency ranges covered by each of the three available bands are specified in Table 3 in the specific document on the `current status of NOEMA`. **Pressure will remain very high in the 1 mm band for the upcoming winter semester, so that the submission of proposals for the 3 mm band and low 2 mm band is strongly encouraged. Also, the significant increase of proposals over the past few years targeting in particular the popular**

deep fields such as COSMOS or GOODS-North has resulted in much higher pressure factors for sources in the LST range between roughly 06h to 16h.

Software: The use of the `aug20` version (or later) of GILDAS is mandatory to prepare your proposals, especially its package ASTRO needs to be used to configure the *PolyFiX* spectral setups. In order to help preparing your proposals, an online sensitivity estimator is made available on `this link`. The sensitivity calculations provided in PMS are based on this online tool as well. The *proposal* sensitivity estimator in the GILDAS package ASTRO is no longer maintained nor synchronised with PMS and should hence not be used anymore for the preparation of proposals.

Configurations: During the winter semester we plan to schedule three different configurations; a preliminary configuration schedule is outlined below (see Table 1). The stations used in the three configurations are given in Table 2. Because of uncertainties for the commissioning of Antenna 11, only configurations based on the 10-antenna array are considered for the upcoming winter semester at this moment. Adjustments to this provisional configuration planning will be made according to commissioning requirements in the frame of NOEMA, proposal pressure, weather conditions, and other contingencies.

Table 1: Configuration Schedule for the Winter 2020 period

Conf	Scheduling Priority
C	November – January
A	January – February
C	February – March
D	March – May

Table 2: Configurations of the ten antenna array

Name	Stations									
10A	W27	W23	W08	E68	E24	E16	E03	N46	N29	N20
10C	W23	W20	W09	E23	E18	E10	E03	N20	N17	N11
10D	W12	W08	W05	E10	E04	N17	N13	N09	N05	N02

A detailed description of the current NOEMA capabilities and organizational considerations are given in a separate document on the `Call for Proposals` pages (or click directly on `this link` for the pdf document).

M. Krips

Guidelines for Observing Time at the IRAM Facilities

Considering the much increased time requests for the IRAM telescopes over the last few years, and considering the substantial new investments of the IRAM partners into upgrading the capabilities of the NOEMA interferometer, the following guidelines for allocation of telescope time are to be considered:

1. In deciding on proposal rankings the Program Committee is requested to take into account the publication record and impact of the proposers with previous IRAM telescope time allocations.

2. The proposers should note in their application whether the same or a similar proposal was or is intended to be submitted to another observatory, in which case a special justification is required why IRAM telescope time is needed.

3. A fraction of the available observing time (7.5% for NOE MA, 15% for the 30-meter) will be invested into projects submitted by PIs affiliated with institutes in non-IRAM partner countries.

4. The fraction of time for Large Programs (a detailed description is given on the `IRAM website`) can be expanded to a total of about 50% of the scheduled telescope time on the IRAM 30-meter telescope while a smaller fraction will be reserved for NOEMA. A significant amount of technical time is still needed to upgrade the observatory to the full NOEMA capabilities and a large number of GTO programs are already running for NOEMA limiting further the available time for new Large Programs. In order to ensure proper management of these programs in close interaction with the IRAM observatory, including the provision of suitable archive data products for the general scientific community, only programs led by a PI located in one of the IRAM partner countries will be considered.

5. Once accepted, PIs of Large Programs cannot submit other proposals (as PI) during the active time of the Large Program.

Finally, we inform that observing time has been reserved by the IRAM partners for the mutually agreed "Observatory Program" MIOP starting with the summer 2019 observing semester.

Data policy

The IRAM data policy is as follows:

- IRAM organizes storage of raw and online calibrated data for the 30-meter telescope and storage of raw data for PdBI/NOEMA on unlimited time scales.
- Header information of PdBI/NOEMA observations later than December 1991 can be found `here in the CDS` (*Centre de Données astronomiques de Strasbourg*).
- Header information of 30-meter telescope observations later than September 2009 can be found `here in the CDS`.
- Data from all projects are stored in the `IRAM Data Archive`. For PdBI/NOEMA raw data are stored while for the 30-meter telescope the online calibrated data are archived. Programs are distinguished between normal programs and Large Programs.
  - Data from Large Programs are public also in calibrated format after an 18 month proprietary period (counting from the end of the last semester of observations) and are accessible through the `IRAM Large Program Archive`.
  - The data of normal projects can be requested after a three year proprietary period (again counting from the end of the last semester of observations). The detailed procedure is described on the `IRAM Data Archive` web page.

RadioNet and ORP Travel Funds

Till the end of 2020, observations with the IRAM facilities are supported by RadioNet under Horizon 2020, the European Framework Program for Research and Innovation. A new program, OPTICON-RadioNet Pilot (ORP) has been proposed to the European Commission, which shall start on January 1, 2021 providing travel support similar to RadioNet.

Within these programs, IRAM is committed to offering Transnational Access (TA) for scientists from all over the world. All TA-supported projects that are scheduled at the NOEMA interferometer or at the 30-meter telescope must acknowledge the support from the European Union. For RadioNet supported projects the following sentence shall be included in the publications resulting from the observations: *The research leading to these results has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 730562 [RadioNet].* For ORP supported projects, the acknowledgement sentence will be distributed at a later stage.

As part of these initiatives, it is expected that travel funds are available to support visits of TA eligible astronomers engaged in research with the IRAM facilities. Travels may be supported to the 30-meter telescope for observations (contact: C. Kramer) and to IRAM Grenoble for the reduction of NOEMA data (contact: J.M. Winters). The `RadioNet home page` provides first information. Whether or not travel is possible depends of course also on the evolution of the COVID-19 pandemic. The Principal Investigators of IRAM proposals eligible for TA funding will be informed individually.

C. Kramer & J.M. Winters