

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, for the winter semester 2021/22 is

09 September 2021, 17:00 CEST (UT + 2 hours).

For NOEMA, the scheduling period is 01 December 2021 to 31 May 2022. For the 30-meter telescope, the scheduling period will last only 4 months and will finish on 04 April 2022, when the upgrade work is scheduled to start (see below for further information).

IRAM proposals should be submitted through the *Proposal Management System* (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 L^AT_EX template is provided on 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 deadline¹. 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 query² 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 NIKA-2 and the large MPG-IRAM Observatory Programs (MIOP) are run with special source protection. The NIKA-2 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 NIKA-2 **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. However, as a significant

¹PMS remains open at all times for submission of Director Discretionary Time proposals.

²search *IRAM* as catalogue name.

investment of technical time is still needed for the NOEMA project and a large number of GT programs are already running at NOEMA, restrictions in terms of available observing time for NOEMA LPs will apply for the upcoming winter semester 2021, similar to the previous observing semesters. Thus, it is strongly recommended to get in contact with us (sog@iram.fr) well in advance of the deadline to discuss the observational feasibility of any planned LP. In view of the planned 30-meter upgrade, no new large programs will be accepted for the 30-meter telescope. You may consult the **Large Program Policy** on the **IRAM web site** for further details.

Both IRAM observatories intend to participate in the two VLBI sessions planned during the upcoming winter semester in March 2022 for the Event-Horizon Telescope (EHT) at 1 mm and the Global mm-VLBI Array (GMVA) at 3 mm. GMVA proposals at 3 mm must be submitted via the NRAO submission tool (the deadline for the March 2022 session is August 2, 2021). Links and more information on the reviewing process are provided at the **GMVA Website**. The proposal submission deadline for the EHT run in March 2022 has already passed (for more details see the dedicated **EHT Proposals Website**). All VLBI proposals requesting time on the IRAM observatories are also reviewed by the IRAM Program Committee.

Publications resulting from observations with NOEMA or the 30-meter telescopes should mention this in an acknowledgment “Based on observations carried out under project number XYZZ [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?

A major upgrade of the 30-meter telescope, its drive system and the primary surface, is planned for 2022. The first phase of the upgrade will start on 1-April 2022 and last till 30-November 2022, i.e. including the last two months of the Winter semester and the entire Summer semester. This plan includes a verification and commissioning phase. No project observations will be possible during this period. It is planned to resume regular science observations in December 2022. A second phase of the update might be carried out along the Summer semester of 2023.

For this reason, no new large programs will be accepted for the upcoming winter semester.

Depending on the further evolution of the COVID-19 pandemic, on-site observations may become possible again in the coming months and during the winter semester. The plan is to stay flexible and to continue allowing for remote observations of regular and pooled projects. However, we still advice strongly that inexperienced observers who have so far never observed with the 30-meter telescope, gain at least 1-2 weeks of on-site experience, provided the pandemic situation allows it.

A new version of PIIC, the software to process NIKA2 data, is available since may 2021. It includes upgrades and new features, e.g. the production of hit maps. The PIIC tutorial has been updated accordingly and is now online. It includes also a new Appendix dedicated to transfer functions.

The commissioning report of the NIKA-2 1.2 mm polarimetry team shows major steps forward in characterizing this new capability, excellent sensitivities, but also a couple of remaining questions which are currently under discussion. It is planned to start offering NIKA-2 polarimetry observations in the winter semester 2022/23.

A new synthesizer for the E090 3 mm band of EMIR will allow to extend its lower frequency edge by 320 MHz. The FTS at 50 kHz resolution will then easily reach the DCO⁺ line at 72.039 GHz. It is planned to install the new synthesizer at the end of the summer semester. More details are given in the capabilities document accompanying this call for proposals.

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

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

1. NIKA-2, 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

The heterodyne frontend EMIR 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.

It is planned to offer several weeks pooled observations with NIKA-2 and with EMIR in order to optimize the use of the telescope.

Proposers are requested to use the EMIR time estimator which is available online via the [IRAM 30-meter telescope webpage](#) or the NIKA-2 time estimator python script which is available via the [NIKA-2 home page](#). Sensitivities are unchanged. The PIIC/GILDAS software for NIKA-2 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 last year, including the lockdown periods in France. The commissioning of Antenna 12 is foreseen to start toward the end of the current summer observing semester. The yearly antenna maintenance period is expected to finish in early December 2021. NOEMA will be operated hence with an 11-antenna array at the beginning of the winter observing period and with a 12-antenna array as soon as the antenna maintenance period and the commissioning of Antenna 12 is completed. The extension of NOEMA's baselines to up to ~1700 m is moving forward with an anticipated completion in

2022. A new correlator mode of PolyFiX, offering the entire bandwidth at a spectral resolution of 250 kHz, is currently being developed and might become operational early 2022.

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. In parallel to this low resolution 2 MHz correlator mode, a large number of high spectral resolution windows with channel spacings of 62.5 kHz can be defined within each sideband and polarisation. **We are currently working on a new correlator mode of PolyFiX that, upon successful implementation, will be offered at shared-risk for the upcoming winter semester. Similar to the low resolution 2 MHz correlator mode, it will provide the full 7.744 GHz bandwidth per sideband in dual polarisation but at a significantly increased spectral resolution of 250 kHz. This new mode cannot be combined with the very high spectral resolution windows at 62.5 kHz spacing.**

Bands: Bands 1 ($\lambda \approx 3\text{mm}$), 2 ($\lambda \approx 2\text{mm}$) and 3 ($\lambda \approx 1\text{mm}$) will be available for this Call, while band 4 ($\lambda \approx 0.8\text{mm}$) 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 high for the upcoming winter semester in the 1 mm band using in particular the extended C- and A-configurations, so the submission of proposals for the 3 mm band and low 2 mm band is strongly encouraged (i.e., requesting observing frequencies below 150 GHz). We also greatly welcome science targets that can be self-calibrated and/or are circumpolar, both factors that allow for very flexible scheduling. 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 ju121b 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.

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 constraints from the commissioning of Antenna-12 and antenna maintenance, only configurations based on the 11-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 2021 period

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

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

Table 2: Configurations of the eleven antenna array

Name	Stations										
11D	W20	W12	W09	W05	E16	E12	E03	N17	N13	N09	N02
11C	W23	W20	W10	W05	E18	E12	E03	N29	N20	N11	N07
11A	W27	W23	W12	E68	E24	E18	E10	N46	N29	N17	N02

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 NOEMA, 15% for the 30-meter) will be invested in 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 represent up to a total of 50% of the scheduled telescope time at either IRAM observatory. A significant amount of technical time is still needed to upgrade the IRAM interferometric array to the full NOEMA capabilities and a large number of GTO programs are already running for NOEMA limiting the available NOEMA time for new Large Programs. The IRAM 30m-telescope will not accept new Large Programs for the upcoming winter semester due to the scheduled major upgrade of the telescope starting in spring 2022.
5. In order to ensure proper management of Large Programs in close interaction with the IRAM observatories, including the provision of suitable archive data products for the general scientific community, only programs led by PIs located in the IRAM partner countries will be considered.
6. Once accepted, PIs of Large Programs cannot submit other proposals (as PI) during the active time of the Large Program.

Data policy

The IRAM data policy is as follows:

- IRAM archives raw and online calibrated data for the 30-meter telescope and 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*) for PdBI and NOEMA.
- 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.

ORP Travel Funds

A new European program, OPTICON-RadioNet Pilot (ORP), has been put in place by the European Commission. The ORP project has received funding from the European Unions Horizon 2020 research and innovation programme under grant agreement No 101004719. The project will provide travel support similar to RadioNet which terminated end of 2020.

Within this program, 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.

As part of this initiative, 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). 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