

RadioNet support for scientific events

Application form

EVENT INFORMATION	
TITLE	GALACTIC COLD CORES MEETING
PLACE	OBSERVATORY OF BESANÇON, BESANÇON, FRANCE
ORGANISER'S INSTITUTE NAME	Institute UTINAM and Observatoire des Sciences de l'Univers (OSU) THETA Julien Montillaud – julien.montillaud@univ-fcomte.fr
DATE	4 – 7 JUNE 2018
NO. OF PARTICIPANTS	20
TOTAL EVENT COST	13910€
RADIONET SUPPORT	4310€
OTHER SOURCES OF FUNDING	French National programme PCMI: 2k€ (for 4 French participants) Programme Hubert Curien "Balaton": 2k€ (for 5 Hungarian participants) OSU THETA: 1.2k€ (for 2 European participants)
REQUEST	
(max. 2 pages)	
Short abstract of the event	<p>The fundamental aspects of star formation, like the initial mass function, the star formation efficiency and time scale, and their variations with the Galactic environment, are closely related with the initial conditions during the early phases of star formation in molecular clouds, and with the formation of dense interstellar structures in the Galaxy. The Galactic cold cores collaboration investigates the interplay between the numerous complex physical processes involved in star formation, including gravity, turbulence, magnetic field and radiation pressure using observational diagnostics and their comparison with simulated observations and models. Impressive improvements in recent magnetohydrodynamics models now permit to simulate large volumes (several 100 pc) of interstellar matter with resolutions sufficient to resolve individual cores (<0.1 pc), opening the way to multi-scale studies connecting individual cores to their host filament, and filaments to their parent molecular cloud. Such theoretical studies challenge observers to characterize star formation on a wide range of scales at the same time.</p> <p>The Galactic cold cores 2018 meeting will gather members of the Galactic cold cores collaboration and external researchers to foster new projects focused on multi-scale studies of star formation and the effect of the Galactic environment on the properties of star forming regions. The presentation of recent results and on-going studies in the collaboration will stimulate discussions to develop strategies to characterize the distribution of interstellar matter from the Galactic scale to molecular complexes and down to the structure of prestellar cores, the distribution of young stellar objects (YSOs) within their parent cloud and throughout the Galaxy, as well as polarisation and magnetic field lines at all scales. This will require the joint effort of experts in very various topics including, among others, Galactic 3D extinction maps, classification of sources by smart algorithms like machine learning, polarization in Planck maps and other millimetre observatories, combination of large scale and high-resolution mapping of millimetre molecular lines.</p> <p>To feed our discussions two experts in millimetre observations are invited. Jérôme Pety from the IRAM, is invited to share his experience on large scale mapping and analysis</p>

	<p>of molecular complexes as well as interferometric observations. Charlotte Vastel (IRAP, Toulouse), is also invited to provide expertise in astrochemical studies of prestellar cores using IRAM facilities.</p>
Relevance for RadioNet	<p>The GCC studies are based on the combination of many kinds of observations, including dust thermal emission with Planck, Herschel or NIKA on the IRAM 30m telescope, polarisation measurements with Planck, as well as molecular line millimetre emission with the IRAM 30m (with EMIR and HERA receivers) and the Effelsberg 100m telescope. The GCC meeting will dedicate several sessions to results obtained with RadioNet facilities (IRAM 30m and Effelsberg 100m). Prospective discussions will be oriented toward the best use of RadioNet facilities to help progressing on (i) the role of magnetic field in star formation using the new NIKA2 receiver on the IRAM 30m telescope, (ii) characterizing the large scale dynamics and excitation properties of molecular complexes using the EMIR and HERA, (iii) characterizing the dense core structures either by high-resolution NOEMA observations or by observing dense gas molecular tracers like NH₃ with the Effelsberg 100m telescope.</p> <p>Numerous PHD students and young researchers will attend the meeting and have the opportunity to meet researchers experienced with RadioNet facilities. This is especially the case of Dana Alina, from the University of Astana (Kazakhstan), whose participation to the meeting aims at providing her contact and advice to start using NIKA2 for polarization studies and NOEMA to characterize small scale structures of prestellar cores.</p> <p>To open our meeting to new angles and new expertise, we invited Jérôme Pety, from IRAM, to (i) present his recent results on the characterization of molecular complexes using large scale mapping and (ii) share his experience in using the NOEMA facility, as well as Charlotte Vastel, from IRAP, to share her expertise in astrochemical studies of prestellar cores using IRAM facilities, and her experience as a 4-year member of the Time Allocation Committee (TAC) of IRAM.</p> <p>A “proposal training session” will be organised during one session of the meeting to help scientists inexperienced with RadioNet facilities to build a proposal for either IRAM 30m and NOEMA or Effelsberg 100m facilities.</p>
Impact on RadioNet	<p>The GCC meeting will enable to advertise the quality of RadioNet facilities toward other geographical communities including the growing Eastern Asia community thanks to the participation of Tie Liu (South Korea, P.I. of the TOP-SCOPE programme) and the developing central Asia community with the participation of Dana Alina (Kazakhstan).</p> <p>This meeting will also contribute to tighten the links between experienced users of RadioNet facilities and scientists working on similar topics with other observational or computation tools. Thanks to the participation of several PHD students and the “proposal training session”, the meeting will contribute to initiate the next generation of astronomers to the RadioNet instrumentation and their related analysis methods.</p>
Use of the RadioNet contribution	<p>We request a support of 4310€ to fund:</p> <ul style="list-style-type: none"> - the invitation of Charlotte Vastel, IRAP expert in astrochemistry using the 30m and NOEMA facilities, IRAM TAC member (1 talk): <ul style="list-style-type: none"> - Train (100€) + plane (150€) return tickets between Toulouse and Besançon: 250€ - 3 night accommodation: 3x 90€ = 270€ - 3 meals: 50€ (evening) - the invitation of Jérôme Pety, IRAM expert in the 30m and NOEMA facilities (1 talk): <ul style="list-style-type: none"> - Train return ticket between Grenoble and Besançon: 150€ - 3 night accommodation: 3x 90€ = 270€ - 3 meals: 50€ (evening) - the participation of Dana Alina (young researcher from Kazakhstan, future user of IRAM facilities): <ul style="list-style-type: none"> - Travel between Astana and Besançon: 1000€ - 4 night accommodation: 4x 90€ - 7 meals: 110€ (including journey meals) - rent a large car to drive a group of 8 participants from Basel airport to Besançon (spare 8 train tickets): 200€

	<ul style="list-style-type: none"> - 6 coffee breaks for 20 participants (3 morning and 3 afternoon): 600€ - 3 lunch breaks for 20 participants (about 16€ per lunch per person): 1000€
Ethics	<p>The gender balance in the GCC group is ~40% females / 60% males. To contribute to even out these numbers, we invite two women (Charlotte Vastel and Dana Alina) and only one man (Jérôme Pety). The invitation of Dana Alina from Kazakhstan also helps diffusing the GCC knowledge to, and share European means with this less well-off country (classified as “developing country” for H2020 funds http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/international-cooperation_en.htm).</p>