RadioNet support for scientific events

Application form for organisers

EVENT INFORMATION	
TITLE	Meeting of the LEGO Collaboration (an IRAM Large Program)
PLACE	Max–Planck–Institut für Radioastronomie, Bonn, Germany
ORGANISER'S INSTITUTE NAME	Haystack Observatory, Massachusetts Institute of Technology Jens Kauffmann, jens.kauffmann@mit.edu
DATE	August 2019, or later
NO. OF PARTICIPANTS	10–15 persons
TOTAL EVENT COST	~8,500 EUR (estimated travel and accommodation costs for participants)
RADIONET SUPPORT	3,500 EUR
OTHER SOURCES OF FUNDING	Several participants will use various general–purpose research grants to individuals and institutes. We can at this point in particular identify contributions from SFB881 of the Deutsche Forschungsgemeinschaft (DFG; S. Glover) and the ERC project "3DICE" (grant agreement 336474; V. Wakelam) by the European Research Council.

REQUEST *(max. 2 pages)*

Short abstract of the event

In 2017, IRAM approved the LEGO Large Program ("Line Emission in Galaxy Observations", ~600 h of observing time; PI: J. Kauffmann) for execution on the 30m–telescope near Granada in Spain. LEGO produces an imaging line survey of ~25 molecular clouds in the Milky Way, i.e., it generates maps of 10×10 arcmin^2 to >30×30 arcmin^2 size that cover ~30 GHz bandwidth near 100 GHz frequency (including key astrophysical species like HCN and CS). This produces the most comprehensive survey of molecular line emission in this band available to date. The data allow to study the formation, evolution, and destruction of molecular clouds. These observations also generate valuable line emission templates that can serve as references for extragalactic work. LEGO expects to complete data collection in 2020.

The LEGO collaboration has by now collected more than half of the data, and first science–ready data products become available during the winter 2018/19. Drafts of first scientific papers are currently being compiled. This activity will intensify during spring 2019, once science–ready data are available.

Here we propose a collaborative workshop that would advance the scientific exploration of the LEGO data, i.e., we will focus on activities that advance specific research papers. The program will include

- a presentation of the LEGO data and data reduction,
- presentations of the research publications by the respective lead authors,
- one–on–one discussions about scientific questions and coordination within the LEGO collaboration, and
- periods for individual research during which analysis procedures and paper drafts can be can be advanced between discussions.

This meeting is necessary because of the size and diverse nature of the LEGO collaboration. The team currently includes 15 members from Germany, France, Spain, Sweden, the UK, the US, and Japan. Tentative participants (i.e., with preliminary confirmation) include:

RadioNet has received funding from the EU's Horizon 2020 research and innovation programme under grant agreement No 730562

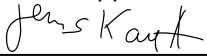
	J. Kauffmann (MIT; PI of LEGO), A. Barnes (U. Bonn), F. Bigiel (U. Bonn), N. Brinkmann (MPIfR), N. Evans (U. Texas, US), S. Glover (U. Heidelberg), A. Guzman (NAOJ), W. Kim (IRAM Spain), C. Kramer (IRAM France), K. Menten (MPIfR), S. Viti (UC London), V. Wakelam (U. Bordeaux), and F. Wyrowski (MPIfR). We therefore envision to conduct a week–long workshop at the MPIfR in Bonn. This will give us access to meeting facilities, office space for individual research work, and convenient accommodation.
Relevance for RadioNet	This workshop is in direct support of the LEGO Large Program on the IRAM 30m–telescope (project number 183–17), which is one of the core facilities of the RadioNet program. The workshop also advances follow–up work at higher frequencies using APEX, which is a further core facility of RadioNet. Several of the workshop participants work at RadioNet partner institutes (i.e., the MPIfR, IRAM, and U. Bordeaux). This event has an interdisciplinary nature: it will include observers of the Milky Way, observers of nearby galaxies, theorists focussing on cloud dynamics, and theorists focussing on astrochemistry. This workshop has the potential to stimulate new long–term collaborations between these domains. This workshop benefits the ERC projects “3DICE” (grant agreement 336474; V. Wakelam) and “EMPIRE” (grant agreement 726384; F. Bigiel), as well as the DFG project SFB881 (S. Glover), which all make use of LEGO data.
Impact on RadioNet	This workshop will substantially advance the exploitation of the LEGO survey, which constitutes a substantial investment of IRAM resources. The specific immediate impact of the workshop will be to advance about half a dozen research publications that are currently being considered by the LEGO collaboration. The long–term impact of the workshop will be to forge new collaborations between researchers who have had little interaction to date. This in particular includes connections between galactic astronomy, extragalactic research, the theory of cloud dynamics, and astrochemistry.
Use of the RadioNet contribution	The funds requested here will be used to support (parts of) the travel expenses for several participants without dedicated funding. This includes specifically: • J. Kauffmann, the PI of LEGO, who’s presence is essential for this meeting; • N. Evans, one of the leading researchers on the use of molecular emission lines as tracers of star–forming gas in nearby galaxies (funds requested for lodging only); • S. Viti, one of the leading researchers on the astrochemistry of molecular clouds and nearby galaxies; and • W. Kim, who is in charge of LEGO operations at IRAM and essential for understanding the quality of LEGO data (funds requested for lodging only). All of these persons are important for the success of this meeting.
Ethics	The LEGO collaboration has strived to achieve gender parity, and roughly achieves this. The workshop is open to all members of the LEGO collaboration. LEGO includes researchers from all career stages, and is thus inclusive in this regard.

Privacy Policy: *With signing this template and applying for RadioNet funding, I accept the Privacy Policy of RadioNet, which is based on the EU General Data Protection Regulation (GDPR).*

Place & Date:

Westford, MA, 2019 Feb. 1

Signature of the applicant:



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