



# RadioNet support for training events

## Application form

EVENT INFORMATION	
TITLE	APEX and ALMA single dish training workshop
PLACE	ESO headquarters, Garching bei München
ORGANISER'S INSTITUTE	ESO
DATE	15 & 16 March 2018
NO. OF PARTICIPANTS	30 to 40
TOTAL EVENT COST	5000 EUR
OTHER SOURCES OF FUNDING	Logistical and organizational support from ESO (e.g. free meeting rooms). ESO will also cover the costs for the coffee breaks.
REQUEST <i>(max. 2 pages)</i>	
Requested contribution [EURO]	5000 EUR.
Use of the RadioNet contribution	<p>We aim to support travel and subsistence mainly for students and young postdocs from a range of European institutes who would otherwise not be able to attend. We will in particular attract participants from less favoured regions, and aim to extend out to scientists from other domains, who have been hesitant in using single dish (sub)mm techniques.</p> <p>We hope to support around 15 participants. In order to save on travel costs, we will organize the workshop in the same week as the APEX science workshop at nearby Ringberg (11 to 14 March 2018), so travel costs can be shared. The format of the workshop will be to start with a small number (2 or 3) of lectures covering the theory of single dish radio telescopes, followed by specific lectures on both ALMA, APEX and SOFIA. We also aim to organise practical workshops where participants can ask specific questions to the experts.</p> <p>By organizing the workshop in the same week as the APEX Ringberg meeting, we hope to invite expert tutors with limited extra cost, e.g. only for lodging.</p> <p>This training event aims to attract new users to the ALMA single dish (total power) and APEX telescopes, to allow existing users to better exploit their data, and to emphasize the complementarity and common tools with other submm and radio facilities.</p>
Relevance for RadioNet and impact	<p>Single dish submm facilities require a set of special observing techniques and data reduction software. IRAM has a history of organizing workshops for the 30m telescope, which are well attended and very successful. However, these workshops focus on mm observing techniques and do not cover the peculiarities of higher frequency single-dish data analysis.</p> <p>For the data reduction of APEX bolometer instruments (e.g. LABOCA, ArTéMiS) specialized software tools such as BoA and Scanamorphose are employed, which are not used at the IRAM 30m. On the heterodyne side, APEX does use the CLASS format as IRAM does, but also here there are several data reduction strategies that are specific to the high-frequency observations (e.g. contributions from strong atmospheric absorption lines).</p> <p>For ALMA single dish observing, special tools have been developed inside the CASA suite. These are specific for ALMA, and have thus far never been covered in any (sub)mm schools organized by IRAM, nor by the Radionet-funded ERIS event, which concentrates on the interferometry aspect of ALMA.</p>

	<p>Given that ALMA total power (single dish) is now an integral part of the observing modes offered by the ALMA observatory, it is high time to organize a dedicated training event to optimally use these data. The combination of interferometer with short baselines and single dish data is essential for sources containing emission on spatial scales larger than the largest recoverable scales. The combination of these different datasets requires the use of special tools in CASA such as feathering. During the training event, we aim to explain the details of these tools to the participants. Training ALMA users in the combination of single dish and interferometric data is extremely relevant as the ALMA observatory is not delivering merged data products to its users, and is not planning to do so in the foreseeable future. The combination of (archival or new) APEX single dish data with ALMA interferometry data is not covered in the standard CASA cookbooks, but will be emphasized in the workshop.</p> <p>The European user community has consistently been putting the highest demand on ALMA observing time compared to its partner communities in North America and East Asia. A major reason for this success is that European users have had prior expertise by using other mm and submm facilities such as IRAM and APEX. The aim of this training event is to ensure that the next generation of European users will maintain the necessary experience to use these specialized tools for single dish submm astronomy.</p> <p>The European astronomical community has access to a broad range of single dish instrumentation from the submm through the classical centimetre wavelengths. We will include a limited set of lectures emphasizing the synergy with such facilities.</p> <p>We will closely involve the European ARC nodes in the organization of the workshop, in particular, but not only in the combination of ALMA single dish and interferometry data.</p>
Accessibility	<p>We will ask users to provide a justification when applying for Radionet travel support. The selection criteria will include the scientific relevance of single dish for the applicants' science goals, the absence of travel support from their host institute and their intention to attend the full training event.</p> <p>Attendance will be restricted to at most 40 participants, to allow more effective training sessions. A motivational letter, explaining the relevance of learning single dish techniques, will be required as part of the registration. Preference for financial support will be given to PhD students and young researchers, with particular emphasis on participants from less favoured regions of Europe and ensuring a proper diversity balance.</p>
Ethics	<p>We organized a workshop on APEX+ALMA Band 5 which had an equal gender balance in the participants, and aim to repeat this for the proposed training event. We further aim to have a strong participation from mostly young European astronomers, as this will be a hands-on event, where we will train the next generation of (sub)mm astronomers.</p>