



# Report from the event supported by RadioNet

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**TITLE** *JOINT PRE-CYCLE 5 ALMA WORKSHOP*

**DATE:** *APRIL 3-4 IN TORUŃ, AND APRIL 6-7 IN PRAGUE*

**LOCATION:** *TORUŃ (POLAND), AND PRAGUE (CZECH REPUBLIC)*

**MEETING WEBPAGE:** [www.ca.umk.pl/alma2017](http://www.ca.umk.pl/alma2017)  
<http://www.asu.cas.cz/alma/activities/upcoming-workshops>

**HOST INSTITUTE:** *TORUŃ CENTRE FOR ASTRONOMY, NICOLAUS COPERNICUS UNIV., AND  
ASTRONOMICAL INSTITUTE, CZECH ACADEMY OF SCIENCES*

**RADIO NET** *UMK / 18*  
**BENEFICIARY / NO:**



# Report:

## 1. SCIENTIFIC SUMMARY

ALMA (Atacama Large Millimeter/submillimeter Array) will start the next observing cycle (Cycle 5) in October 2017. More than 4000 hours of 12-m Array time is anticipated to be available for successful observations of approved projects over a period of 12 months. A deadline for proposal submission for Cycle 5 is on April 20, 2017. In order to increase the awareness about ALMA and to prepare the local professional community for Cycle 5 observations, as well as attract new users, the Czech node of the European ALMA Regional Center (ARC) in collaboration with the Toruń Centre for Astronomy (Nicolaus Copernicus University) organised on April 3-4 and April 6-7, 2017 a Joint pre-Cycle 5 ALMA workshop.

Currently, the numbers of submitted and accepted ALMA proposals from countries of the region of central and eastern Europe are rather low. The Czech ARC node is responsible for providing support to users from countries of the region. The community of radio astronomers potentially interested in ALMA is large, especially in Poland, also thanks to the role of the Toruń Centre for Astronomy as a Very Long Baseline Interferometry (VLBI) station. In Cycle 5, proposals were accepted for VLBI observations with ALMA in continuum at wavelengths 3 mm and 1.3 mm. Therefore, the Joint pre-Cycle 5 workshop was planned as a two-part event that took place in Poland (in Toruń) and in the Czech Republic (in Prague), in order to offer the local communities more opportunities for ALMA training and thus to address more potential ALMA users. While aiming primarily on professionals and students from the two countries, the workshop was open to participants from all countries. In addition to the Czech Republic and Poland, it was advertised to universities and astronomical institutes in many surrounding countries, including Slovakia, Ukraine, Hungary, Austria, Lithuania, Latvia, Estonia, and Russia.

The main purpose of the Joint workshop was to provide the local professional community with a simplified access to ALMA, the current state-of-the-art astronomical facility, and thus to increase the share of successful ALMA projects coming from astronomers from the region of central and eastern Europe. Thus, researchers with specific projects in mind were welcome to the workshop to help them turn their ideas into actual ALMA proposals, but also prospective users of ALMA, especially students, who would increase their knowledge about ALMA and come with observing projects only later.

The two 1.5 day meetings provided lectures and training covering a range of topics from an introduction to millimeter observations and interferometry, description of the capabilities of ALMA, as well as process of proposal preparation, to practical, hands-on tutorials on the ALMA Observing Tool, a software tool that is used to prepare and submit ALMA proposals. To present the audience with the wide range of science topics covered by ALMA, several talks about the key science results achieved so far with the interferometer were presented, also with focus on relevant astronomical and astrophysical research performed in Poland and the Czech Republic. The lectures and training were delivered by the Czech ARC node members (Pavel Jáchym, Ivica Skokić, Abhijeet Borkar, Rhys Taylor and Arek Berlicki), ESO ARC members (Andrew Biggs, and Suzanna Randall) and Leonardo Testi (ALMA European Project Scientist). See the next section, Agenda of the event, for a detailed program of the meeting.

Thanks to a large fraction of students (including Bachelor and Master students in astronomy) among the participants, the Joint workshop is expected to have an impact also on a longer time-scale. Ultimately, the workshop will encourage the students to come and stay in the field of radio/mm astronomy. Similarly to the other pre-Cycle 5 workshops organised by other nodes of the European ARC (e.g. German Community Days and Swiss Community Days in March 2017), the participants of the Joint workshop were delivered with a comprehensive introduction into ALMA and the process of proposal preparation.

While the results of the ALMA Cycle 5 Call for proposals are not yet public, we hope that the Joint workshop has not only helped Polish and Czech astronomers to submit their new observing projects, but has also motivated students and young researchers starting their career to think about ALMA as an important tool for their future scientific research. Clearly, the Joint workshop attracted many new faces and thus contributed in a significant way to extending the local ALMA community. The RadioNet support was crucial for organising the workshop and thus achieving the goals.



**Announcement**

**Program**

**Registration**

**Required installations**

**Organisers and sponsors**

**Contact**

The Toruń Centre for Astronomy of the Nicolaus Copernicus University and the Czech ALMA Regional Center organize a joint workshop aimed to prepare the community of Polish and Czech astronomers to the upcoming **ALMA Cycle 5** deadline expected on 20 April 2017. The workshop will take place on 3-4 April 2017 in Piwnice near Toruń, Poland, and will be organized by the two nodes. The meeting will include an introduction to the ALMA observatory, its current capabilities and the science highlights, as well as the introduction to the ALMA procedures and tools. The main focus during the hands-on exercises will be the ALMA Observing Tool so that participants can start to prepare their own ALMA proposals with technical support from experts.

Registration deadline is **March 27, 2017**.

**Program**

**Monday, April 3 - Piwnice near Toruń**

9:30 - 10:00	Introduction to ALMA	- Pavel Jachym (ALMA node, Ondřejov)
10:00 - 10:30	ALMA in connection to Polish astronomy	- Agata Karska (NCU)
10:30 - 11:15	Coffee break	
11:15 - 12:00	ALMA science today and tomorrow	- Leonardo Testi (ESO Garching)
12:00 - 12:30	ALMA Cycle 5 capabilities and constraints	- Leonardo Testi
12:30 - 13:00	ALMA Observing Tool	- Andy Biggs (ESO)
13:00 - 14:30	Lunch break	
14:30 - 15:30	Hands-on tutorial 1	- Andy Biggs, Pavel Jachym, Ivica Skokic
15:30 - 16:00	Coffee break	
16:00 - 18:00	Hands-on tutorial 2	- Andy Biggs, Pavel Jachym, Ivica Skokic
18:00	Conference dinner	

**Tuesday, April 4 - Piwnice near Toruń**

9:30 - 10:00	EU ALMA Regional Center and Czech node	- Pavel Jachym
10:00 - 10:30	Solar observations with ALMA	- Ivica Skokic
10:30 - 11:00	Coffee break	

**Upcoming Workshops**

**Joint pre-Cycle 5 ALMA workshop**  
April 06-07, Prague

Figure 1: Joint pre-Cycle 5 ALMA workshop websites - the Toruń meeting (left, [www.ca.umk.pl/alma2017](http://www.ca.umk.pl/alma2017)) and the Prague meeting (right, <http://www.asu.cas.cz/alma/activities/upcoming-workshops>)

## 2. AGENDA OF THE EVENT

Monday, April 3, 2017, Toruń

- 09:30 - 10:00 **Introduction to ALMA** - P. Jáchym (Czech ARC node in Ondřejov, Czech Republic)
- 10:00 - 10:30 **ALMA in connection to Polish astronomy** - A. Karska (Toruń Centre for Astronomy, Nicolaus Copernicus University in Toruń, Poland)
- 10:30 - 11:15 Coffee break**
- 11:15 - 12:00 **ALMA science today and tomorrow** - L. Testi (ESO Garching, Germany / INAF, Italy)
- 12:00 - 12:30 **ALMA Cycle 5 capabilities and constraints** - L. Testi (ESO Garching, Germany / INAF, Italy)
- 12:30 - 13:00 **ALMA Observing Tool** - A. Biggs (ESO Garching, Germany)
- 13:00 - 14:30 Lunch break**
- 14:30 - 15:30 **Hands-on tutorial 1** - A. Biggs (ESO Garching, Germany), P. Jáchym (Czech ARC node in Ondřejov, Czech Republic), I. Skokić (Czech ARC node in Ondřejov, Czech Republic)
- 15:30 - 16:00 Coffee break**
- 16:00 - 18:00 **Hands-on tutorial 2** - A. Biggs (ESO Garching, Germany), P. Jáchym (Czech ARC node in Ondřejov, Czech Republic), I. Skokić (Czech ARC node in Ondřejov, Czech Republic)
- 18:00 - 20:30 Conference dinner**



Tuesday, April 4, 2017, Toruń

- 09:30 - 10:00 **EU ALMA Regional Center and Czech node** - P. Jáchym (Czech ARC node in Ondřejov, Czech Republic)
- 10:00 - 10:30 **Solar observations with ALMA** - I. Skokić (Czech ARC node in Ondřejov, Czech Republic)
- 10:30 - 11:00** **Coffee break**
- 11:00 - 13:00 **Hands-on tutorial 3** - A. Biggs (ESO Garching, Germany), P. Jáchym (Czech ARC node in Ondřejov, Czech Republic), I. Skokić (Czech ARC node in Ondřejov, Czech Republic)
- 13:00 - 14:30** **Lunch and end of the meeting**

Thursday, April 6, 2017, Prague

- 14:00 - 14:15 **Czech ALMA Regional Center node** - P. Jáchym (Czech ARC node in Ondřejov, Czech Republic)
- 14:15 - 15:30 **Introduction to ALMA** - P. Jáchym (Czech ARC node in Ondřejov, Czech Republic)
- 15:30 - 16:00** **Coffee break**
- 16:00 - 17:30 **Science with ALMA** - A. Borkar, R. Taylor, I. Skokić, A. Berlicki (Czech ARC node in Ondřejov, Czech Republic)
- 17:30 - 18:00** **Discussion**

Friday, April 7, 2017, Prague

- 09:30 - 10:00 **ALMA Cycle 5 Capabilities** - S. Randall (ESO, Garching, Germany)
- 10:00 - 10:30 **Proposal preparation** - P. Jáchym (Czech ARC node in Ondřejov, Czech Republic)
- 10:30 - 11:00** **Coffee break**
- 11:00 - 11:30 **ALMA Support and ALMA Archive** - S. Randall (ESO, Garching, Germany)
- 11:30 - 12:00 **Introduction to Observing Tool** - A. Biggs (ESO, Garching, Germany)
- 12:00 - 13:30** **Lunch break**
- 13:30 - 15:30 **Hands-on tutorial 1** - A. Biggs, S. Randall (ESO Garching, Germany)
- 15:30 - 16:00** **Coffee break**
- 16:00 - 17:00 **Hands-on tutorial 2** - A. Biggs, S. Randall (ESO Garching, Germany)
- 17:00** **Discussion and End of the meeting**

### 3. PARTICIPANTS

*Toruń meeting:*

The participants were mostly local students and staff members from the Toruń Centre of Astronomy (15 out of 25 participants). Other Polish participants were from the University of Warsaw, Centre for Theoretical Physics in Warsaw, Centre for Space Research in Warsaw, University of Zielona Góra, Adam Mickiewicz University in Poznań, and Nicolaus Copernicus Astronomical Centre, Polish Academy of Sciences, Toruń. There were nine women out of 25 participants (36% fraction). The tutors were from ESO (Garching,

Germany) - Leonardo Testi and Andrew Biggs, and from the Czech ARC node (Czech Academy of Sciences, Ondřejov) - Pavel Jáchym and Ivica Skokić. One talk was also given by dr. Agata Karska, who also chaired the sessions and organised the meeting in Poland. In total ten students - six master and four doctoral (incl. five women) were present. Unfortunately, four participants from the University in Kraków did not arrive despite signing up for the workshop (and are not counted here).

#### *Prague meeting:*

Eighteen participants from Czech universities and institutes arrived for the Prague meeting, including the Charles University in Prague, Masaryk University in Brno, Silesian University in Opava, and the Astronomical Institute, Czech Academy of Sciences. Similarly to the Toruń meeting, more people registered for the Prague meeting who however later did not arrive. There were eight Bachelor, Master or PhD students present (incl. 3 women), indicating that there is potentially a high interest among starting astronomers in ALMA and new astronomical facilities in general. Moreover, some of the students are of Slovak nationality so they will potentially bring the knowledge to Slovakia after they finish their studies. The ratio of women was six to twelve (~ 33% fraction). Two tutors from ESO (Garching, Germany) arrived - Suzanna Randall and Andrew Biggs, and five members of the Czech ALMA Regional Center node, the main organiser of the Joint pre-Cycle 5 ALMA workshop, gave talks. The meeting was chaired by Pavel Jáchym from the Czech ARC node.



*Figure 2: Snapshots from the Toruń (left) and Prague (right) meetings of the Joint pre-Cycle 5 ALMA workshop.*

The Joint workshop was announced to universities and astronomical institutes in many central/eastern European countries - Estonia, Lithuania, Latvia, Russia, Ukraine, Hungary, Slovakia, Austria. While there was some positive feedback especially from Hungarian astronomers (one of them even registered for the Prague meeting), in the end nobody could arrive. This could partially be due to a lengthy process of obtaining visa for potential participants from Ukraine or Russia. With this in mind, future workshops have to be planned at least a few months in advance to ensure that participants from non-EU countries could participate. Also, to eliminate last-moment cancellations, introducing a small registration fee could be useful in future workshops. Nevertheless, we learned that to attract interest of astronomers from abroad needs more effort and we plan to organise more meetings about ALMA in the near future.



#### **4. RADIONET FINANCIAL CONTRIBUTION**

The financial contribution (2161,11€) provided by RadioNet for the Joint workshop was used primarily for support for 4 tutors and 4 selected students.

#### **5. PUBLICATIONS**

*The project leading to this publication has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 730562 [RadioNet]*