



Report from the event supported by RadioNet

TITLE *ALMA DATA PROCESSING WORKSHOP*

DATE: *5-7 DECEMBER 2017*

LOCATION: *LISBON (PORTUGAL)*

MEETING WEBPAGE: *[HTTP://WWW.IASTRO.PT/RESEARCH/CONFERENCES/ALMA2017/](http://www.iaastro.pt/research/conferences/alma2017/)*

HOST INSTITUTE: *PORTUGUESE ALMA CENTRE OF EXPERTISE (IA-FCUL)*

RADIONET *TO BE FILLED BY MANAGEMENT*

BENEFICIARY / NO:

Report:

1. SCIENTIFIC SUMMARY

The huge increase of data available within the ALMA archive, has improved enormously the possibility for the scientific community to exploit the potentials of this facility. The number of publications per year since the Cycle 0 is growing constantly, at a rate comparable to others well known telescopes, such as the VLT at ESO, as shown in Fig. 1.

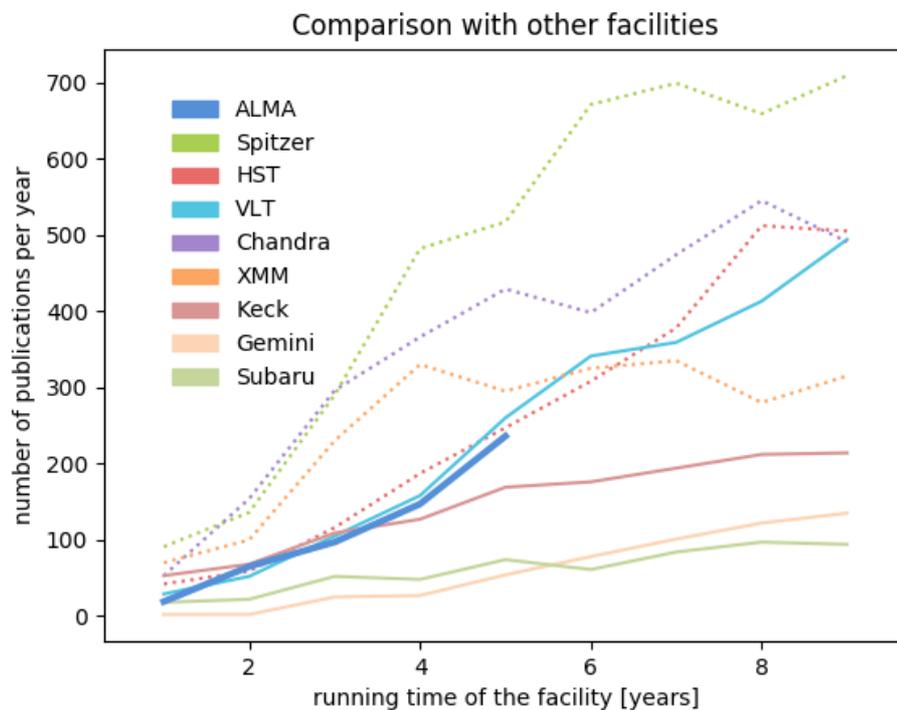


Fig. 1: Number of publications per year since the running time of the facility (Credits: Felix Stoehr, ESO)

More than 70% of the data has been publicly downloaded, and the publication related to the archival data increased from 9% on June 2015 up to 14% on September 2016. This, joint to new radio facilities under construction all over the world, such as MeerKat, ASKAP, and JVLA, suggests a promising future for the investigation of this part of the electromagnetic spectrum, and in particular then for the interferometric community.

However, there are still many issues related to the non-friendly nature of interferometric data, which need different processes to be transformed in scientific useful data. This, in some way, hamper a full exploitation of the enormous potential of the ALMA database, with still wide space for fruitful investigations for many researchers. For these reasons, the Portuguese ALMA CENTER of Expertise (PACE) on behalf of the Institute of Astronomy and Space Sciences, in collaboration with the ESO, organized an "ALMA Data Processing Workshop" held in Lisbon on 5th, 6th, and 7th of December (website: <http://www.iastro.pt/research/conferences/alma2017/>).

The goal of the workshop was to bring together all the community which were planning to use ALMA data in the future, and join them together for different hands-on sessions. The organizers, together with expert

invited speakers from the ARC nodes of UK and Netherlands, guided the participants from raw to reduced data, in two days and half of full work. Moreover, we included the possibility for researchers with their own data, to ask support and interactively reduce their data, increasing in this way the impact of the workshop for their science.

The workshop environment was very informal, with a large fraction of time devoted to discussion, analysis, examples, and disclosure of tips and/or suggestions to solve different problems.



Fig. 2 – *Ciro Pappalardo in the opening session*



Fig. 3- Panoramic View of the workshop

After the two and half day, during the wrap-up session, we discussed the problems related to each single case, and we summarize the main steps performed during the workshop. The participants, with an high fraction of beginners, were able to complete the processes and extract fits file images from the raw data we gave them on the first day. Obviously this is only a starting point, but we believe that the examples chosen by the SOC of the workshop covered important issues related to the data analysis, and surely will help them in their future studies.

2. AGENDA OF THE EVENT

The speakers of the event were:

1 – Ciro Pappalardo (Lead Scientist of the Portuguese ALMA Center of Expertise)

2 – George Bendo (Invited speaker from the UK ARC node)

3 – Ciriaco Goddi (Invited speaker from the Netherlands ARC node)

The workshop program is attached below:

5th December - afternoon session

13:30 - 14:00	Logistics - Welcome
14:00 - 15:00	Introduction to interferometry
15:00 - 15:30	Coffee Break
15:30 - 16:00	Introduction to ALMA + Alma Observing Tool
16:00 - 16:30	Introduction to VLBI
16:30 - 17:00	ALMA Scientific Case I: How it was done: An explanatory Science case

6th December

09:30 - 10:00	ALMA Scientific Case II - How it was done: An explanatory Science case
10:00 - 10:45	Hands-on Session: Calibration
10:45 - 11:15	Coffee Break
11:15 - 12:30	Hands-on Session: Calibration
12:30 - 13:30	Lunch
13:30 - 15:00	Hands-on Session: Calibration
15:00 - 15:30	Coffee Break
15:30 - 17:00	Hands-on Session: Calibration



7th December

09:30 - 10:00	Wrap-up of calibration session
10:00 - 10:45	Imaging Principles
10:45 - 11:15	Coffee Break
11:15 - 12:30	Hands-on Session: Imaging
12:30 - 13:30	Lunch
13:30 - 15:00	Hands-on Session: Imaging
15:00 - 15:30	Coffee Break
15:30 - 16.30	Hands-on Session: Imaging
16:30 - 17:00	Wrap-up of the workshop

3. PARTICIPANTS

A total of 19 astronomers attended the workshop, coming from ten different countries: Pakistan, Greece, Turkey, Croatia, Netherlands, Ireland, Italy, UK, Spain, and of course Portugal. As expected, the most represented communities were Portugal and Spain, for logistics reasons. 37% of the participants were female, and more than half of the participants were PhD or Master students.

Beyond the participants, the organizers invited two expert speakers from the ARC node of the UK, Dr. George Bendo, and from Netherlands, Dr. Ciriaco Goddi, which work as ALMA data analysts in their respective ALMA nodes.

An important aspect to underline is that almost 63% of the participants were not experts in interferometry, and approached the topic for the first time. This is very positive, as the main goals of the workshop was exactly to attract young scientists towards the use of interferometric data.

4. RADIO NET FINANCIAL CONTRIBUTION

We used RadioNet support to pay the full stay of two invited speakers, which helped to manage the hands-on sessions, and we offered a fellow for the accommodation to 5 young PhD students from Germany, UK, and Italy. With the available support we also paid the costs relate to the event, such as the coffee-breaks and the hall-rent.

Below the list of supported participants:

5. PUBLICATIONS

The presentations and some pictures of the workshop are posted on the web site:

<http://www.iastro.pt/research/conferences/ama2017/>

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