

REPORT ON THE RADIONET3 NETWORKING ACTIVITY

TITLE: ALMA/HERSCHEL ARCHIVAL WORKSHOP

DATE: 15-17 APRIL 2015

TIME: SECOND HALF OF 1ST DAY
AND TWO FULL DAYS

LOCATION: GARCHING, GERMANY

**MEETING
WEBPAGE** <https://www.eso.org/sci/meetings/2015/AlmaHerschel2015.html>

HOST INSTITUTE: ESO, KARL-SCHWARZSCHILD-STR. 2, 85748 GARCHING, GERMANY

PARTICIPANTS NO: 80

REPORT:

1. Agenda of the meeting

Day 1, April 15 (afternoon)		
12:00	Registration	
The ALMA & Herschel Archives		
13:00	Opening/Welcome	
13:10	<i>An Introduction to ALMA</i>	Leonardo Testi
13:30	<i>The ALMA Archive</i>	Felix Stoehr
13:50	<i>The ALMA products</i>	Dirk Petry
14:10	<i>The road from data delivery to publications</i>	Evanthia Hatziminaoglou
14:30	<i>End-to-end workflow from searching for data to producing a science-grade image</i>	Martin Zwaan
14:50	Break	
15:10	<i>An introduction to Herschel</i>	Göran Pilbratt
15:30	<i>The Herschel archive</i>	Eva Verdugo
15:50	<i>The Herschel products: calibration accuracies and science readiness</i>	Anthony Marston
16:10	<i>Herschel data-mining tools enabling Herschel-ALMA science</i>	Pedro Garcia-Lario
16:30	<i>Workflow from searching for Herschel data to extracting science-grade spectro-photometric information</i>	Ivan Valtchanov David Teyssier
17:10-18:00	Discussion	
18:00	Reception	
Day 2, April 16		
The ALMA & Herschel Archives		
09:00	<i>The Herschel/PACS point source catalogue</i>	Gabor Marton
09:20	<i>Building the Herschel-SPIRE Point Source Catalog (SPSC)</i>	Bernhard Schulz
Cosmology/High-redshift Universe		
09:40	<i>ALMA surveys of high-redshift, star-forming galaxies.</i>	Mark Swinbank (Invited)
10:20	<i>Resolving the Cosmic Infrared Background into Normal Star Forming Galaxies with ALMA</i>	Seiji Fujimoto
10:40	<i>The ALMA legacy of Herschel deep surveys</i>	Stefano Berta
11:00	Break	
11:20	<i>The role of massive halos in the Cosmic Star Formation History</i>	Paola Popesso
11:40	<i>From Herschel to ALMA: unveiling the major mode of star formation in the early Universe</i>	Maurilio Pannella
12:00	<i>From Herschel to ALMA: looking at dusty and gassy galaxies</i>	Eelco van Kampen
12:20	<i>Herschel-ATLAS and ALMA. HATLAS J142935.3-002836, a lensed major merger at redshift 1.027</i>	Hugo Messias
12:40	<i>Imaging of a strongly-lensed galaxy SDP.81 from ALMA Long Baseline Campaign observations</i>	Matus Rybak
13:00	Lunch	
Local Universe		

14:00	<i>Exploiting the synergy of Herschel and ALMA for nearby galaxies</i>	Leslie Hunt (Invited)
14:40	<i>Tracing AGN and SF activity with far-IR lines</i>	Carlotta Gruppioni
15:00	<i>High-J CO lines in Nearby Galaxies with the Herschel FTS and ALMA Band 9</i>	Julia Kamenetzky
15:20	Break	
15:40	<i>ALMA Observations of 99 GHz free-free and H40alpha line emission from star formation in NGC 253</i>	George Bendo
16:00	<i>Spatially-resolved dust properties of the GRB 980425 host galaxy</i>	Michal Michalowski
16:20	<i>Revealing the structure of the cold dust emission and submm excess with ALMA</i>	Maud Galametz
16:40-17:30	Discussion	
19:00	Dinner	
Day 3, April 17		

ISM/Star formation		
09:00	<i>Herschel and ALMA synergy from the ISM to planet forming regions</i>	Paola Caselli (Invited)
09:40	<i>Infrared Dark Clouds seen by Herschel and ALMA</i>	Ke Wang
10:00	<i>New FIR light on TMC-1 - Analysis of Herschel continuum and molecular line data</i>	Orsolya Fehér
10:20	<i>Mid-J CO Diagnostics of Turbulent Dissipation in Molecular Clouds</i>	Andy Pon
10:40	Break	
11:00	<i>Earliest phases of high mass star formation with Herschel and ALMA</i>	Sarolta Zahorecz
11:20	<i>Catalogue of Herschel-PACS observations of Young Stellar Objects: the jet-disc emission</i>	Pablo-Riviere-Marichalar
11:40	<i>Modeling the outer regions of Transitional Disks with Herschel</i>	Alvaro Ribas-Gomez
12:00	<i>Gas inside the 97 au cavity around the transition disk Sz,91: ALMA + Herschel results</i>	Hector Canovas
12:20	<i>Far-infrared imaging of transiting-planet host stars with candidate warm debris disks</i>	Bruno Merin
12:40	Lunch	
Astrochemistry, evolved stars and solar system objects		
13:40	<i>Synergies between ALMA high angular resolution observations and submillimeter and far-IR data from Herschel archive</i>	Jose Cernicharo (Invited)
14:20	<i>A salty torus around IRC+10216</i>	Guillermo Quintana-Lacaci
14:40	<i>Silicon bearing molecules towards IRC+10216: Herschel and ALMA unveil the molecular envelope of CWLeo</i>	Luis Velilla Prieto
15:00	Break	
15:20	<i>Unexpected hydrides and molecular distributions in the inner layers of IRC+10216</i>	Marcelino Agundez
15:40	<i>Combined IRAM, Herschel/HIFI, and ALMA study of abundant molecules in Orion KL</i>	Belén Tercero
16:00	<i>Spectroscopy of atmospheric trace gases on Titan with Herschel: Advances and Discoveries</i>	Miriam Rengel
16:20-17:15	Discussion	
17:15	End of the Workshop	

2. Scientific Summary

The *Herschel* Space Observatory has produced high quality photometric and spectroscopic data in the wavelength range approximately 55 to 670 μm during its lifetime from 2009 to 2013. To date, all *Herschel* science data (~23,400 hours of observations, ~37,000 AORs), in addition to a variety of user-provided data products, are publicly available through the *Herschel* Science Archive. Meanwhile, the ALMA Science Archive is being populated with observations carried out in the first three ALMA observing Cycles, with more data becoming publically available by the day.

The higher frequency ALMA bands overlap with the lower frequency (longer wavelength) *Herschel* bands, and despite the huge difference in spatial resolution, *Herschel* sources provide ideal targets for ALMA follow up. Furthermore, with more and more ALMA data becoming publically available every day, the possibilities to further explore these two complementary datasets that cover the fields of planetary, Galactic and extragalactic astrophysics, increase manifold. However, *Herschel* and ALMA data differ greatly and in order to explore their full potential, the archival users need to be aware not only of the contents of the two archives but of the differences of the datasets, as well.

Many of the *Herschel* users are increasingly proposing for ALMA time, while a large fraction of ALMA users until now have not spent enough time in checking the *Herschel* archive to complement their science with *Herschel* observations.

The target audience was all astronomers that have already used data from either of the two facilities and would now want to expand their knowledge to the neighboring wavelength regime. The workshop focused on the ALMA/*Herschel* Synergies and archival research, with the following *scope and goals*:

- Provide examples of science cases based on the combined use of *Herschel* & ALMA data, covering a broad range of astrophysical topics, from star formation to evolved stars to galaxies and cosmology.
- Promote mutual awareness of *Herschel* & ALMA data archive contents
- Show users how to explore, access and visualize *Herschel* & ALMA data products, including existing quick look data analysis tools
- Enable *Herschel* & ALMA archival science
- Assist users in the preparation of Cycle 3 ALMA proposals based on existing *Herschel* data

The workshop was divided in two parts: a technical first half day, where the ALMA and *Herschel* archives and their contents were described, followed by two full days of science talks, split in two themes each.

Four invited talks covered the major advances made jointly with ALMA and *Herschel* data in the most prominent fields of astrophysics (one per theme), namely the high- and low-redshift Universe, star and planet formation processes and astrochemistry. The contributed talks and posters focused on individual projects covering but expanding on the same topics, even touching upon the topic of our solar system. The main outcome of the workshop was that synergies between the *Herschel* and the ALMA data and archives will continue to exist long after the end of *Herschel* operations and that both facilities will leave a great legacy behind, thanks to their respective archives.

Almost half of the participants came from Germany (34/80) and Spain (22/80), with the remaining participants coming from Belgium, Chile, Croatia, the Czech Republic, France, Hungary, Italy, Japan, The Netherlands, the UK, and the USA. A third of the participants (27/80) were female, and so were two out of the four invited speakers and 10/25 contributed talks. The workshop was particularly attractive to your researchers, as shown by the large combined fraction of students and young postdocs (33/80).



Fig. 1: Workshop picture

3. Attendance list (incl. participant names, affiliation and country) signed by the participants and confirmed by the organizer

Attached.

4. Financial Report / RadioNet3 contribution

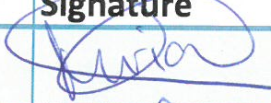
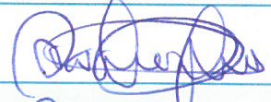
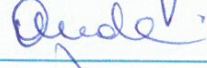



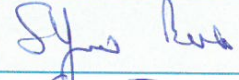




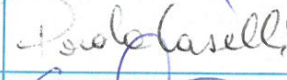

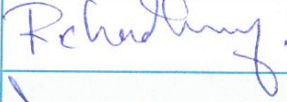
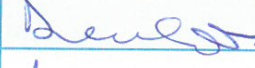
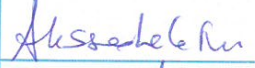

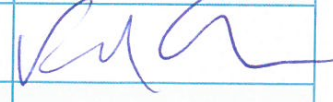

RadioNet contributed 978.75 euro to this workshop, used for local logistics.

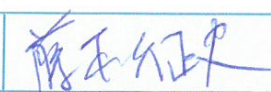

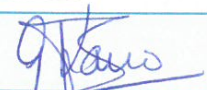
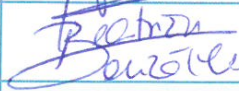
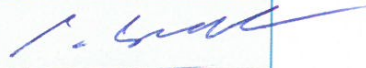
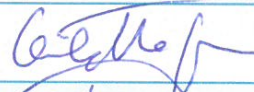
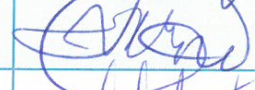
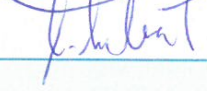




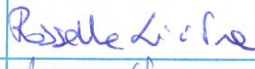



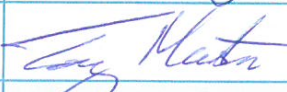


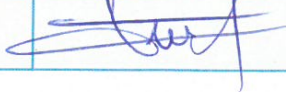
5. Conference Proceedings and Web page

We will not issue any conference proceedings, the presentations, however, are available from the workshop web pages:

<https://www.eso.org/sci/meetings/2015/AlmaHerschel2015/program.html>

(Click on 'Expand all' to get the links to the full presentations).

First Name	Last Name	Dinner (Y/N)	Signature
Miriam	Aberasturi	✓	
Marcelino	Agundez	✓	
Paola	Andreani	✓	
Maryam	Arabsalmani	✓	
Pedro	Beirao	✓	
George	Bendo	✓	
Stefano	Berta	—	
Roman	Brajsa	✓	
Luca	Calzoletti	✓	
Hector	Canovas	✓	
Emmanuel	Caux	✓	
Paola	Caselli	—	
Jose	Cernicharo	?	
Rumpa	Choudhury	✓	
Daniela	Coia	✓ <i>Vege.</i>	
Alessandra	Contursi	—	
Ghazaleh	Erfanianfar	—	
Katrina	Exter	✓	
Davide	Fedele	—	—
Orsolya	Fehér	✓	

Seiji	Fujimoto	✓	
Maud	Galametz	✓	
Pedro	Garcia-Lario	✓	
Beatriz	Gonzalez	✓	
Meiert	Grootes	✓	
Carlotta	Gruppioni	✓	
Evanthia	Hatziminaoglou	✓	
Leslie	Hunt	✓ vege.	
Rob	Ivison		
Christophe	Jean	✓	
Julia	Kamenetzky	✓	
Mark	Kidger	✓	
Valerio	Lattanzi	-	
Rossella	Licitra	✓	
Elisabetta	Liuzzo	✓	
Alicia	López-Oramas	-	
Dieter	Lutz	✓	
Anthony	Marston	✓	
Gabor	Marton	-	
Jean	Matagne	✓	
Israel	Matute	-	

Veg.

Bruno	Merin	✓	Bruno
Hugo	Messias	✓	✗
Michal	Michalowski	✓	Michalowski
Maurilio	Pannella	? ✓ ✗ unsure	Maurilio Pannella
Jérôme	Pety	✓	Jérôme
Göran	Pilbratt	✓	Göran Pilbratt
Kate	Pitchford	✓	Kate Pitchford
Andy	Pon	✓	Andy Pon
Paola	Popesso	-	Paola
Gergö	Popping	✓	Popping
Guillermo	Quintana-Lacaci	✓	Guillermo
Jesús	Ramos-Medina	✓	Jesús
Miriam	Rengel	✓	Miriam
Alvaro	Ribas Gómez	✓	Alvaro
Pablo	Riviere-Marichalar	✓	Pablo
Javier	Rodón	-	Javier
Martino	Romaniello		
David	Rosario	✓	David
Sambit	Roychowdhury	✓	Sambit
Delphine	Russeil	✓	Delphine
Matus	Rybak	✓	Matus

Carmen	Sanchez Contreras	✓	<u>Carmen Endrey</u>
→ Peter	Schilke		
Bernhard	Schulz	<u>Vogetarlan</u>	<u>[Signature]</u>
Ivica	Skokić	✓	<u>Ivica</u>
Felix	Stoehr	✓	<u>Felix Stoe</u>
Mark	Swinbank	—	<u>M. Swinbank</u>
Belén	Tercero	—	<u>Belén</u>
Leonardo	Testi		
David	Teyssier	✓	<u>[Signature]</u>
Ivan	Valtchanov	✓	<u>Ivan</u>
Eelco	van Kampen	✓	<u>Eelco</u>
Luis	Velilla Prieto	✓	<u>Luis Velilla</u>
Eva	Verdugo	✓	<u>Eva Verdugo</u>
Ke	Wang	✓	<u>Ke Wang</u>
Rein	Warmels	✓	<u>Rein Warmels</u>
Tayyaba	Zafar	✓	<u>Tayyaba Zafar</u>
Sarolta	Zahorecz	✓	<u>Zahorecz Sarolta</u>
Martin	Zwaan	✓	<u>[Signature]</u>
Vlas	Sokolov	✓	<u>[Signature]</u>
Dirk	Petry		