The European ALMA Regional Centre
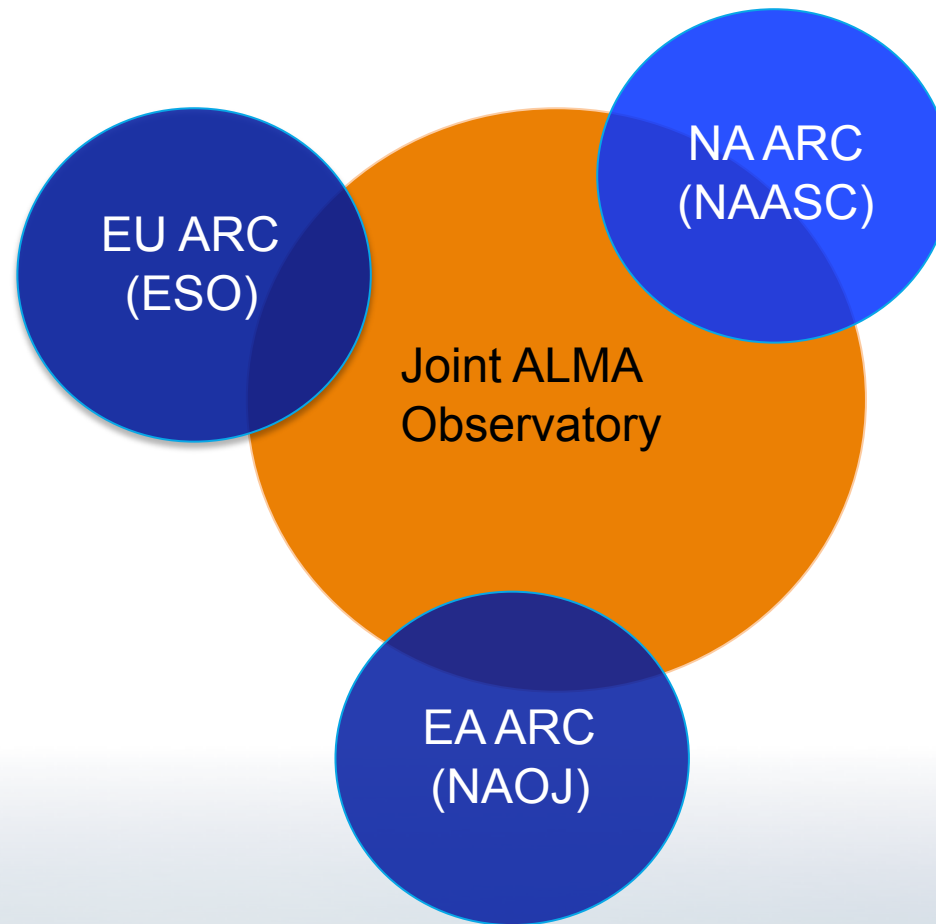## The German ARC node

University of Bonn

University of Cologne

ALMA Regional Centres = interface between users and the observatory

One ARC for each executive

EU ARC
(ESO)

NA ARC
(NAASC)

Joint ALMA
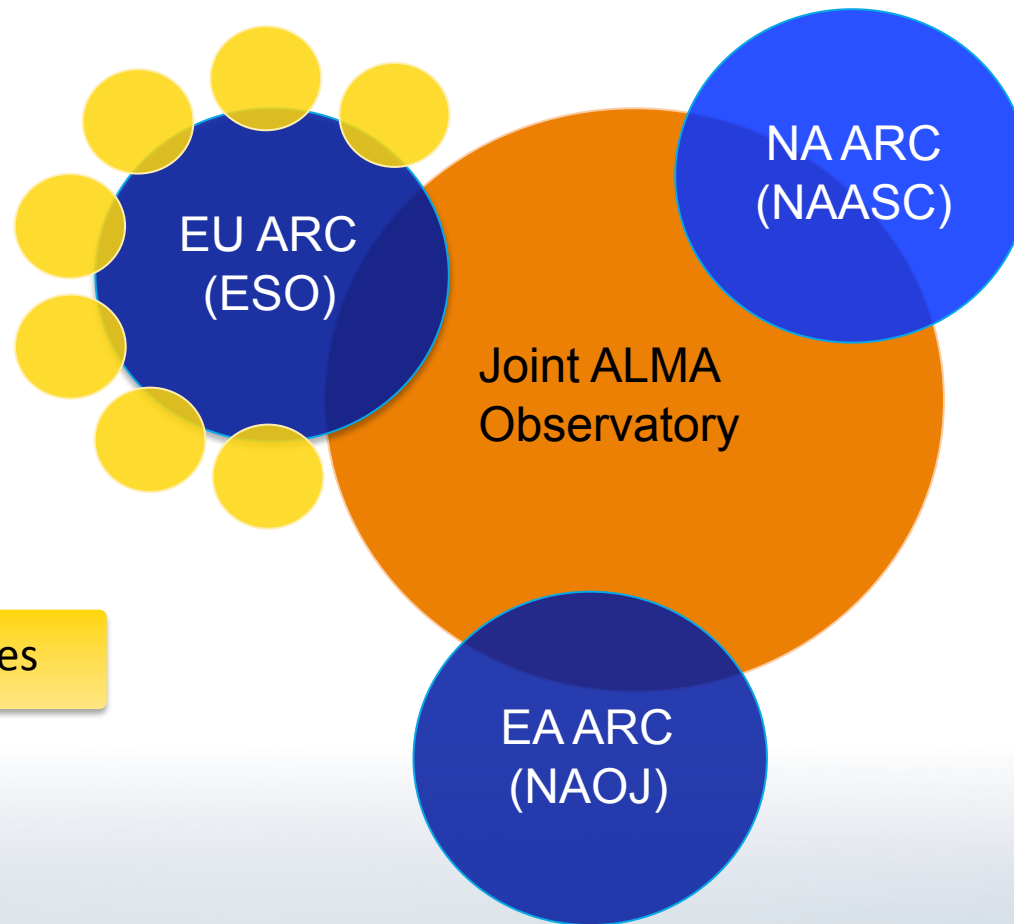Observatory

EA ARC
(NAOJ)

ARCs provide a package of operationally critical services to ALMA operations in Chile and the regional user communities (helpdesk, archive, software and hardware maintenance and development)

The ARC is your "one-stop shop" for all things ALMA!

ALMA Regional Centres = interface between users and the observatory

One ARC for each executive

EU ARC (ESO)

NA ARC (NAASC)

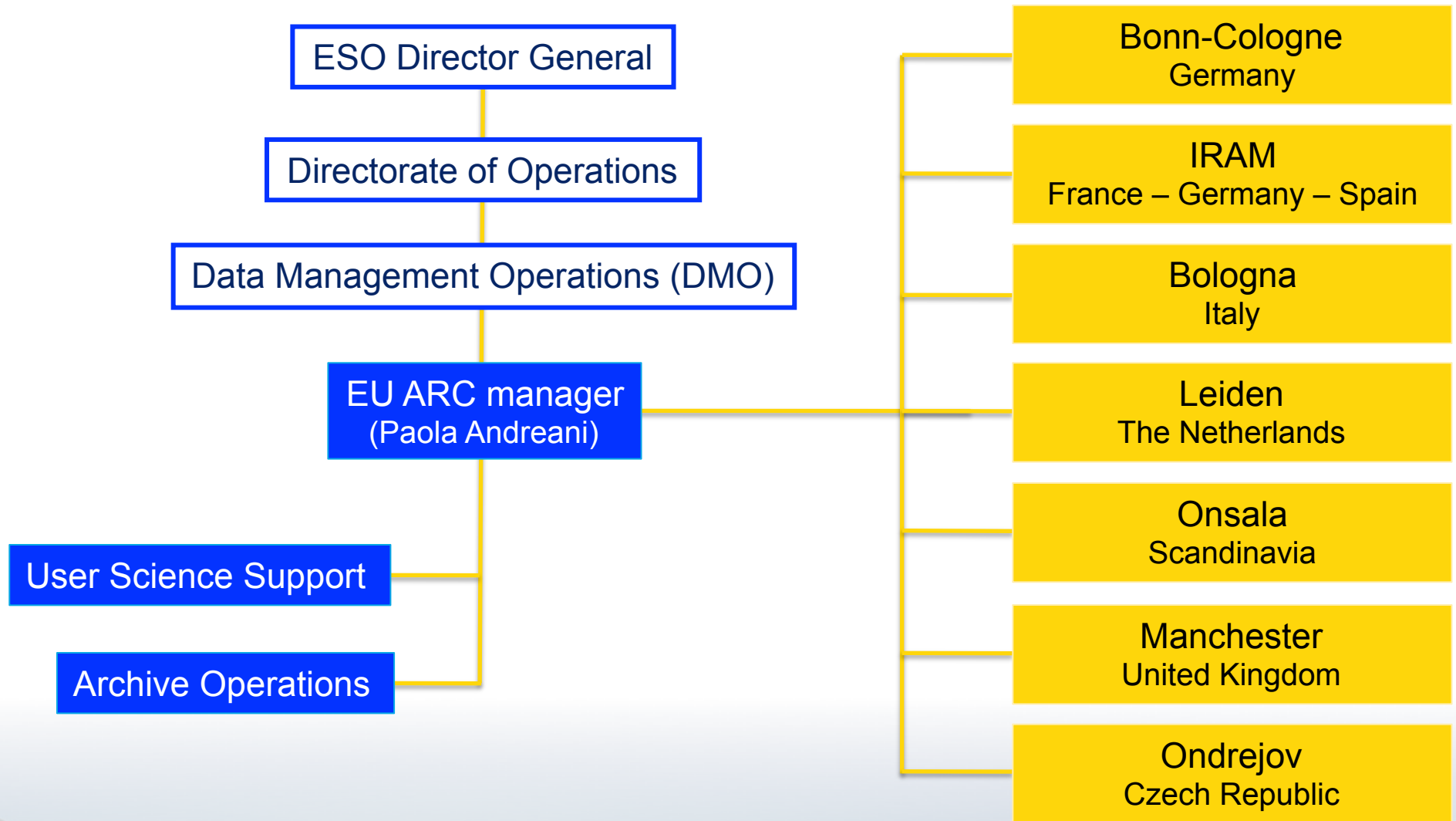Joint ALMA Observatory

EA ARC (NAOJ)

European ARC nodes

ARCs provide a package of operationally critical services to ALMA operations in Chile and the regional user communities (helpdesk, archive, software and hardware maintenance and development)

In the EU executive, enhanced services like face-to-face support and advanced data reduction techniques are delegated to the ARC nodes

The European ARC structure

```
ESO Director General
        |
Directorate of Operations
        |
Data Management Operations (DMO)
        |
EU ARC manager
(Paola Andreani)
        |
User Science Support
        |
Archive Operations
```

- Bonn-Cologne — Germany
- IRAM — France – Germany – Spain
- Bologna — Italy
- Leiden — The Netherlands
- Onsala — Scandinavia
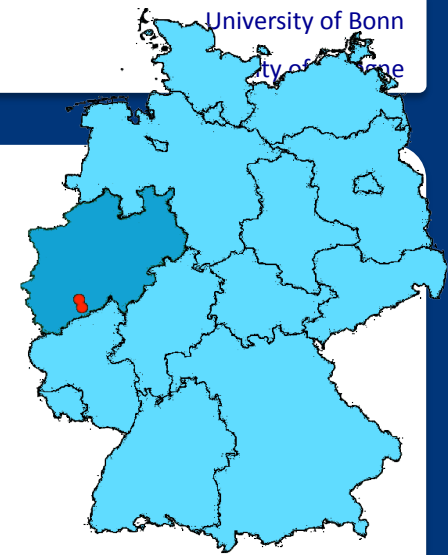- Manchester — United Kingdom
- Ondrejov — Czech Republic

Tasks of the European ARC:

- interface between the user community and the observatory (**helpdesk**)

- close links with the Department of Science Operations (DSO) in Chile

- **basic (pipeline) data analysis**

- **archive**

- observing strategies

- software/tools development

- support for large/advanced programs

- **user training** (workshops, tutorials, schools)

Tasks of the European ARC nodes:

- **face-to-face user support**

- participate in the ALMA helpdesk

- **contact to local scientific community**

- new software and techniques

- advanced data reduction

- **support for special projects**

- public relations and outreach

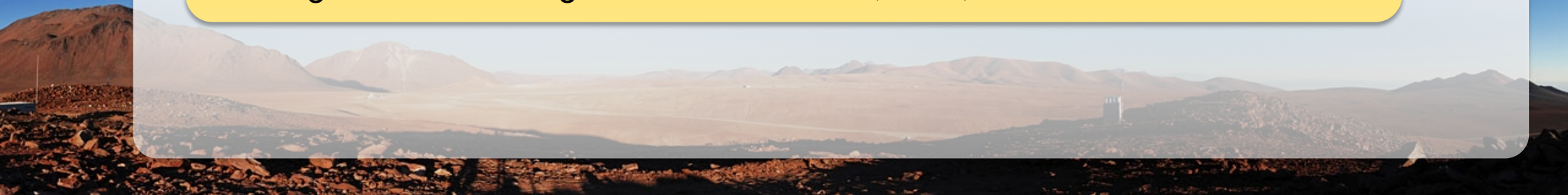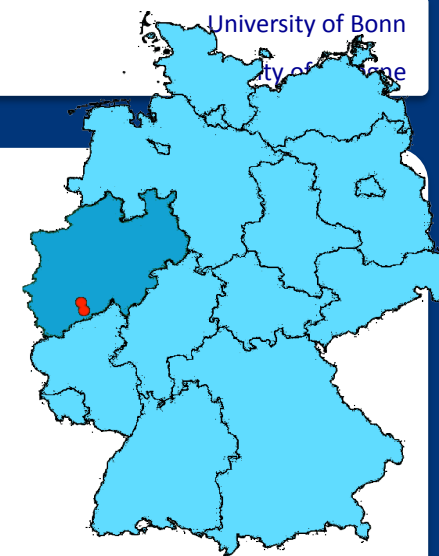- **user training** (workshops, tutorials, community days)

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The German ARC node: Background

▪ initially an initiative of the Research Association for Interferometry in NRW (2004), including the Universities of Bonn, Cologne, Bochum, and the MPIfR

▪ today: Universities of Bonn and Cologne

technical, scientific, and educational collaborations:

- International Max-Planck Research School for Radio and Infrared Astronomy
- Bonn-Cologne Graduate School in Physics and Astronomy
- operation of KOSMA, NANTEN2, APEX plus development of instruments
- instruments for Herschel, SOFIA, LBT, and VLTI
- the local 100-m telescope in Effelsberg
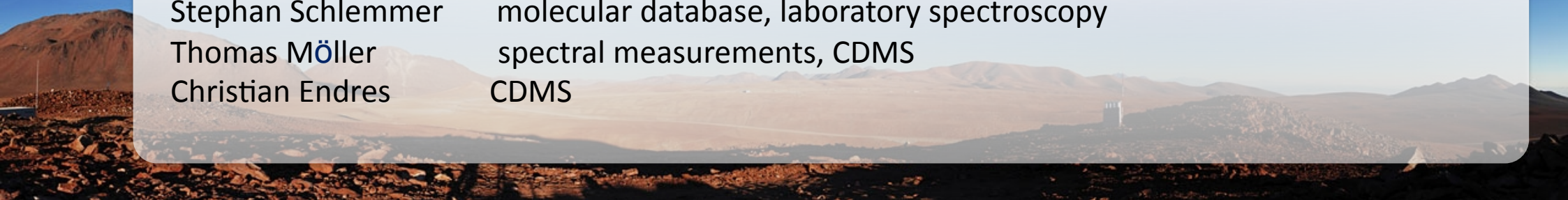- strong involvement in global- and mm-VLBI, EVN, and LOFAR

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The German ARC node: personnel

Bonn:

Frank Bertoldi	administration, training, outreach, short spacings
Wouter Vlemmings	management, CASA, training (until Sep. 2011)
Stefanie Mühle	management, f2f support, CASA (since Sep. 2011)
Reinhold Schaaf	ARTIST/IT support, f2f support
Rolf Kuiper	ARTIST (until Aug. 2011)
Kaustuv moni Basu	CASA, OT, short spacings
Ramiro Franco	OT, web maintenance (until Sep. 2011)
Felipe Alves	CASA, f2f support, polarization, web (since May 2011)
Matthias Maercker	OT/CSV, f2f support, CASA (ESO fellow)
Vernesa Smolcic	OT/CSV, f2f support, training (ESO fellow)
Sofia Ramstedt	polarisation/calibration (from Jan. 2012)
Sandra Burkutean	short spacings, simulations, SZ (PhD student)
Michael Geffert	public outreach

Cologne:

Peter Schilke	coordination, CATS, molecular lines
Stephan Schlemmer	molecular database, laboratory spectroscopy
Thomas Möller	spectral measurements, CDMS
Christian Endres	CDMS

How to get help: ALMA user support within the European ARC

The function of the European ARC:

- Enhanced software/tools development

- Basic (pipeline) data analysis

- Archive operation

- Observing strategy

- Support for large/advanced programs

- User training (workshops, tutorials, schools)

- (face-to-face support: delegated to ARC nodes)
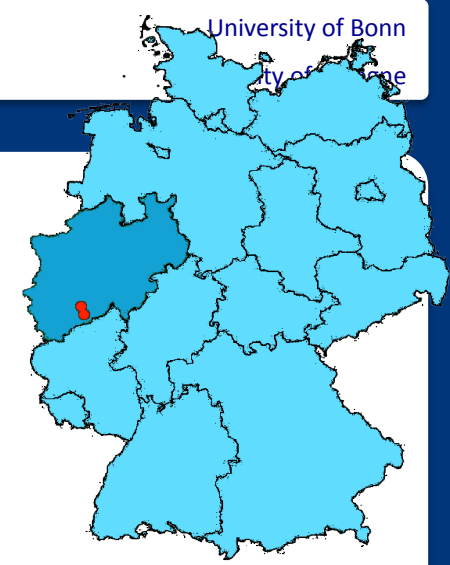
Need help?

Contact the ALMA helpdesk

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How to get help: What can the German node do for you?
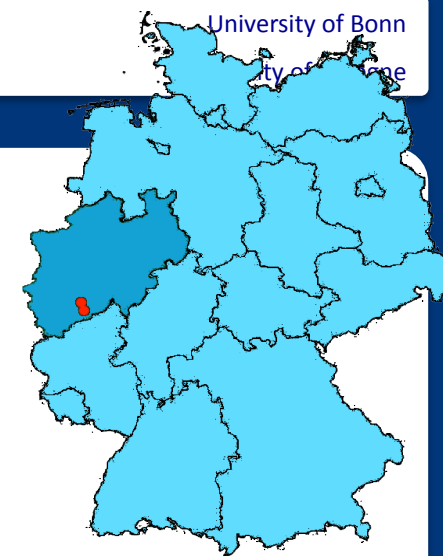
You are welcome to contact or visit Bonn for help with

▪ Proposal preparation: you have a project in mind, but need help in planning?

▪ Phase II support: proposal accepted, but how to prepare the scheduling blocks?

▪ Data analysis: project observed, but you need advice/infrastructure for data reduction?

▪ Interpretation: all done, but what are you really looking at?

▪ special expertise: advanced data analysis and modeling (incl. CDMS), polarimetry, zero spacings: continuum

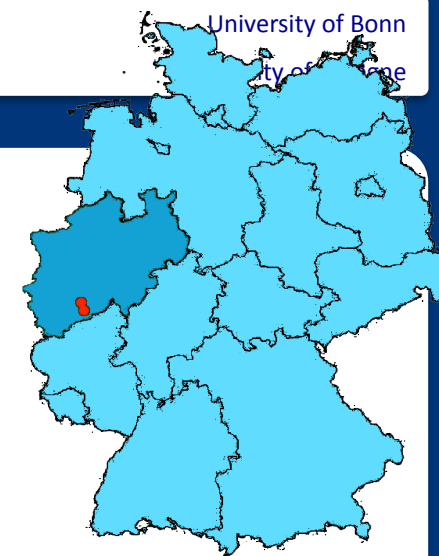▪ in addition: tutorials, community days, ALMA news, mailing list

Need help?

Contact us via the ALMA helpdesk

University of Bonn

The infrastructure at the German ARC node:

▪ a dedicated ARC room with workstations:
→ access to all required software (OT, CASA) and the data archive

▪ a server with sufficient computing power:
→ effective data reduction and analysis

▪ a dedicated contact scientist:
→ personal support to guarantee a productive stay in Bonn

▪ a personal desk with internet connection for your laptop

▪ a parent-child room

▪ a vibrant research environment (Argelander-Institut für Astronomie, MPIfR, University of Cologne)
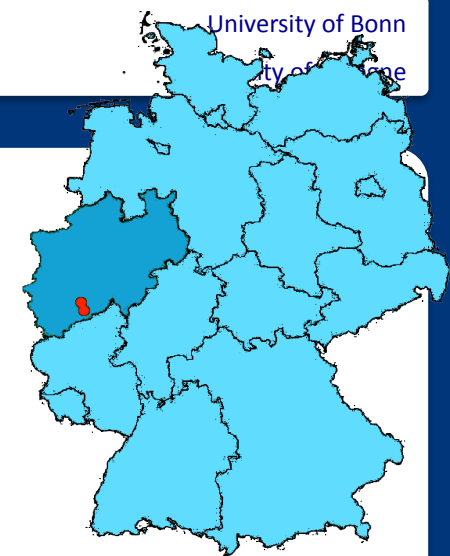
▪ free tea and coffee

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For more information:

http://www.astro.uni-bonn.de/ARC (⇨ mailing list)

arc@astro.uni-bonn.de

info booth on the ground floor (⇨ talk at your institute)
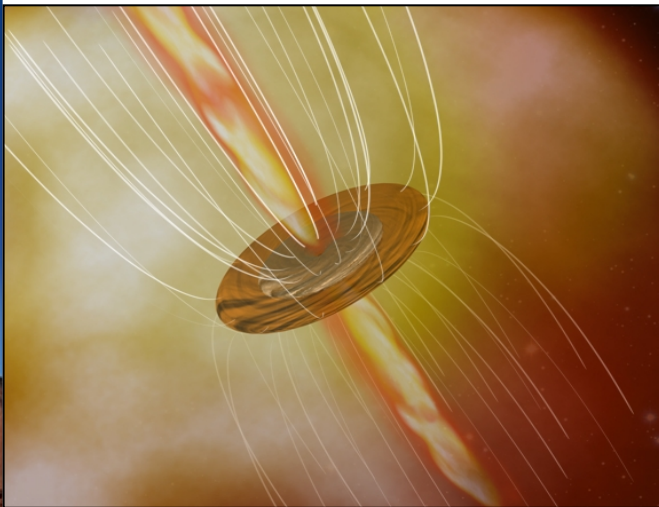
University of Bonn

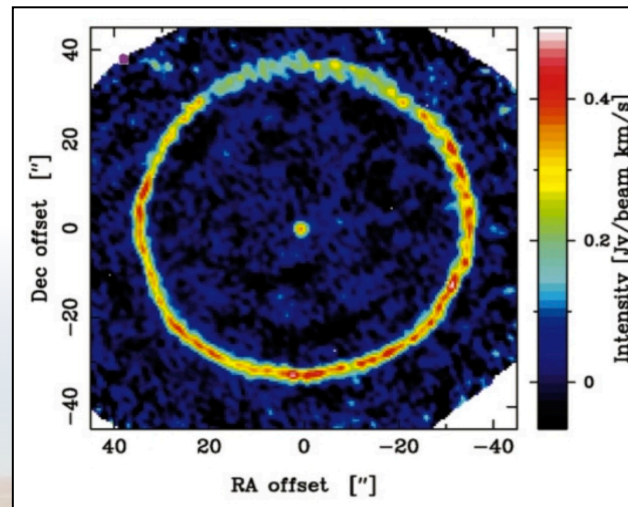**ALMA related science at the German ARC**

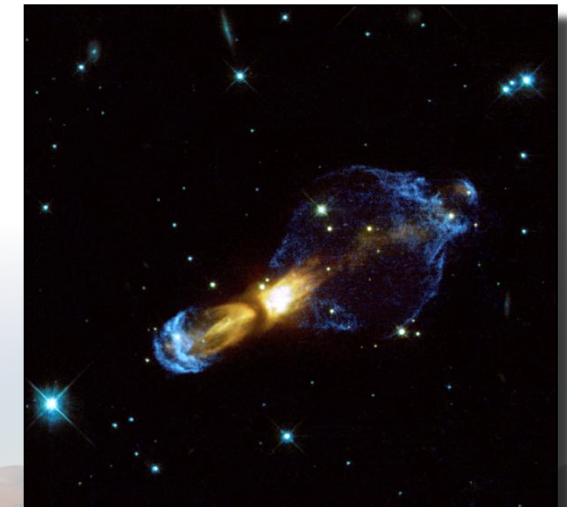**What will we do with ALMA? A few examples...**

Stellar evolution:

- The birth of stars, molecular clouds, infall, outflows, circumstellar disks

- Magnetic fields in massive star formation and evolved stars

- The mass-loss history, mechanism, and symmetry on the AGB

Cepheus A (artist impression)
(credit: T. Maercker)

detached shell around TT Cyg
(Olofsson et al.)

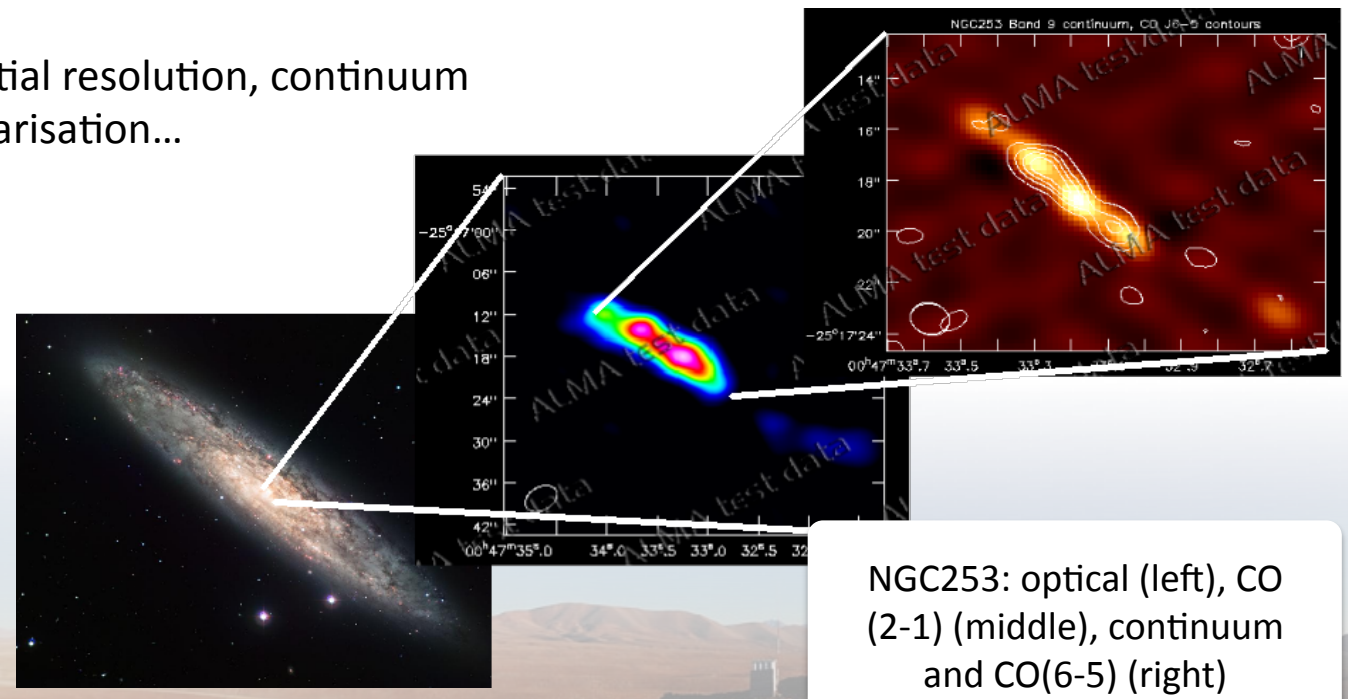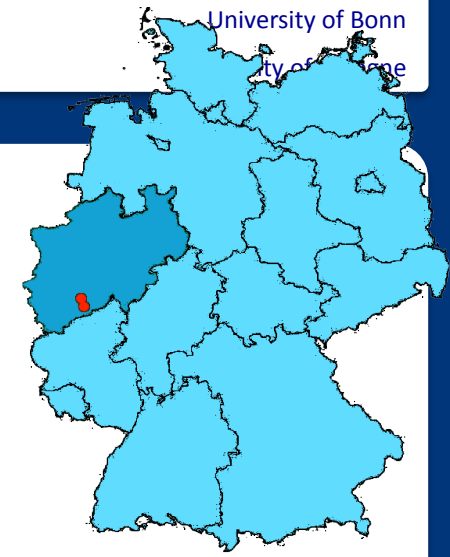Rotten Egg Nebula
(NASA/ESA Bujarrabal)

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ALMA related science at the German ARC

What will we do with ALMA? A few examples...

Extragalactic astronomy:

- High-resolution imaging of high-z galaxies in CO, C⁺, CI, and dust

- SF rates in high-z galaxies, morphologies, dynamical mass

- detecting the first galaxies at z = 6 - 11 in, e.g., C⁺

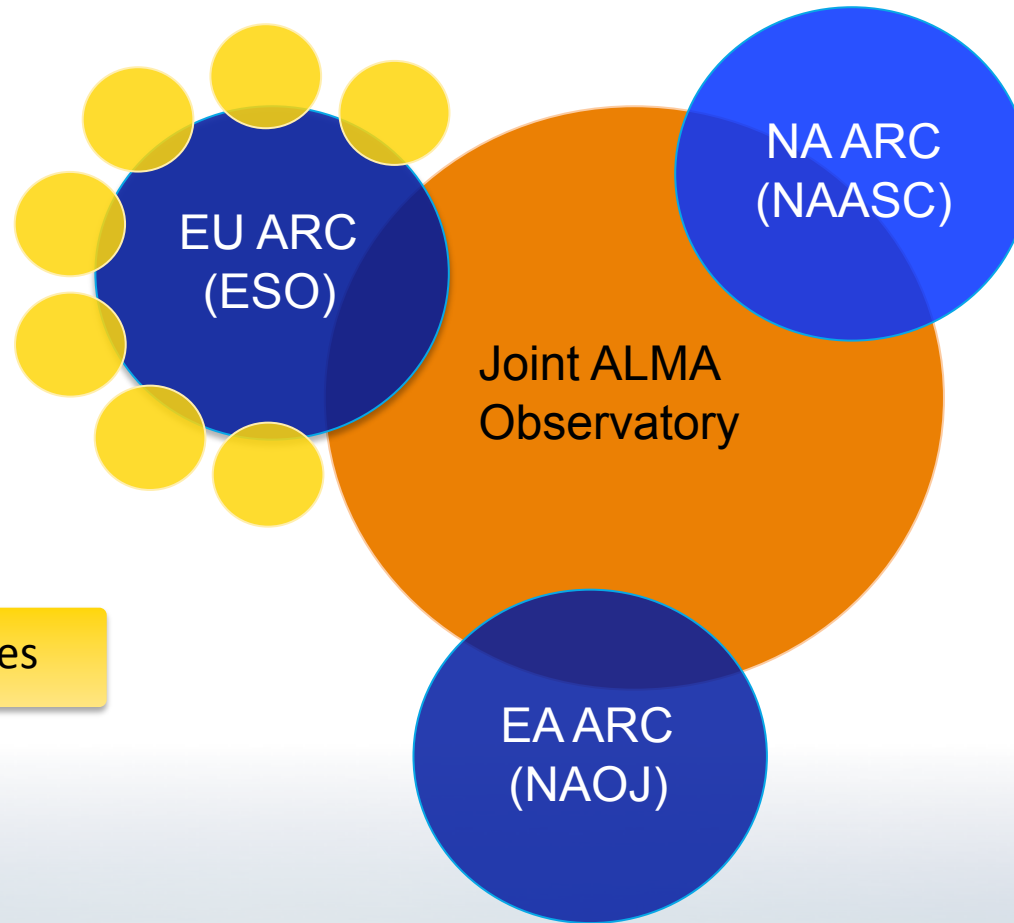 - high sensitivity, high spatial resolution, continuum and line observations, polarisation...

NGC253: optical (left), CO (2-1) (middle), continuum and CO(6-5) (right)
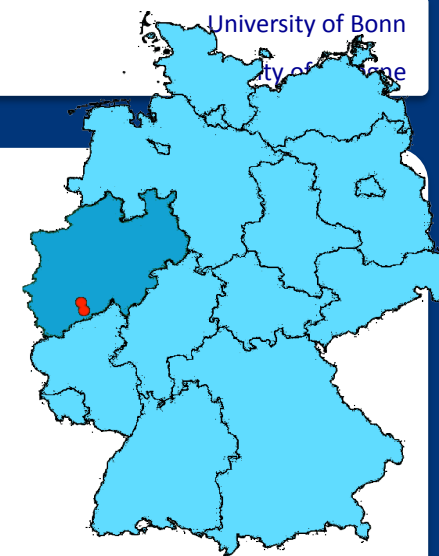
The ALMA regional Centres

ALMA operations shared by three ARCs

ARCs provide basic user interface, as well as basic archive, software, and hardware maintenance and development

NA ARC
(NAASC)

EU ARC
(ESO)

Joint ALMA Observatory

EA ARC
(NAOJ)

European ARC nodes

Enhanced services are needed to provide advanced user support, e.g. face-to-face support
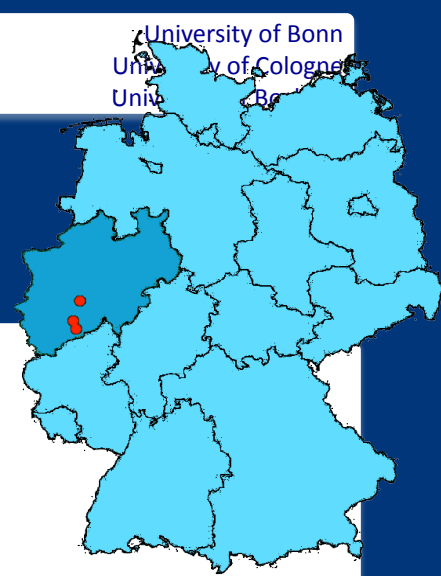
- initiative of the Research Association for Interferometry in NRW (2004)

- Universities of Bonn, Cologne, and the MPIfR

- technical, scientific, and educational collaboration:

  - International Max-Planck Research School for Radio and Infrared Astronomy

  - Bonn-Cologne Graduate School in Physics and Astronomy

  - operation of KOSMA, NANTEN2, APEX plus development of instruments

  - instruments for Herschel, SOFIA, LBT, and VLTI

  - the local Effelsberg 100-meter telescope

  - strong involvement in global- and mm-VLBI, EVN, and LOFAR

- Initial inititative of the Research Association for Interferometry in NRW (2004)

first: Universities of Bonn, Cologne, Bochum, and the MPIfR
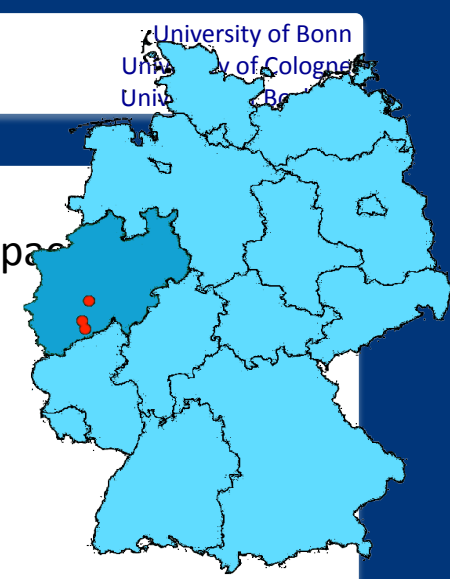today: Universities of Bonn and Cologne

- technical, scientific, and educational collaboration:

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Univ... Bo...

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University of Cologne
University of Bonn

Bonn:

Frank Bertoldi   Administration, training, outreach, short spacing
Wouter Vlemmings   Management, ARTIST, CASA, training (→ Sep)
Ramiro Franco   OT, web pages (→ Sep)
Felipe Alves   Polarization (May →)
Kaustuv moni Basu   OT, CASA, short spacing
Matthias Maercker   OT Software/CSV, ESO fellow
Vernesa Smolcic   OT Software/CSV, ESO fellow
Reinhold Schaaf   ARTIST, IT support
Rolf Kuiper   ARTIST
Sandra Burkutean   PhD student: short spacing, simulations, SZ
Michael Geffert   Public outreach
Two open positions

Cologne:

Peter Schilke   Coordination, CATS, molecular lines
Stephan Schlemmer   molecular database, laboratory spectroscopy
Thomas Giesen   molecular database
Holger Müller   spectral measurements, CDMS
Christian Edres   CDMS