

# Data Processing and Radioastronomy - Part 2

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## Participants

- Chiara FERRARI (responsible of the A.N.R. project [OPALES](#) - “Non-thermal processes in galaxy clusters”)
- Claude AIME
- Albert BIJAOUI
- Sebastien BOURGUIGNON
- Kenneth CAVAGNOLO
- Henry LANTERI
- David MARY
- Eric SLEZAK

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## Agenda of the meeting

1. Discussion about possible national / international meetings to be organized
2. Presentation of the new OPALES post-doc: K. W. Cavagnolo
3. Talk by D. Mary: “Sparse Decomposition in Redundant Dictionaries for Interferometric Image Reconstruction”

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## Discussion and ToDo List

1. We plan to organize two possible meetings. We firstly would like to organize a workshop in Nice and invite people of the French radio/sub-mm community to share our different expertise in radio data reduction and analysis. This workshop would take place in winter/spring 2011. The main aim of the second meeting is to discuss at an international level about the existing tools for radio source finding and measurement and the possibility to implement new algorithms adapted to the particular needs of radio data. This includes the capability to take into account variate and more or less complex morphologies of galactic and extra-galactic radio sources, as well as complex patterns related to deconvolution problems in aperture synthesis maps.
  2. Dr. Kenneth Cavagnolo, the post-doc currently working on OPALES project, introduces himself to the collaborators of the project. Ken is an expert of X-ray and radio data analysis to study the role of feedback from active galactic nuclei on the formation and evolution of large scale structures. He did his Ph.D. in Astrophysics at Michigan State University (U.S.; 2008), and a first post-doc at University of Waterloo (Canada; 2008-2010). Ken has joined the Opales project on September 1, 2010.
  3. David Mary presents an introductory talk about his research work on “Sparse Decomposition in Redundant Dictionaries for Interferometric Image Reconstruction” (see attached file).
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4. The state of the art of current developments on calibration and imaging techniques in radioastronomy can be found at the web page of the conference “CALIM 2010: The 5th SKA Workshop on Calibration and Imaging” ([click here](#)).
5. The following needs have emerged:
  - organization of the two meetings mentioned above: C. Ferrari is in charge to apply for two possible grants, one of the “Action Specificque SKA-LOFAR” and one of the “Conseil General des Alpes-Maritimes”
  - test on real data: K. Cavagnolo should provide to D. Mary a small, quite simple image for a first test
  - test on simulated data, including firstly only point sources, and afterwards diffuse radio sources: C. Ferrari will ask if uv simulated visibilities are available, for instance, in the framework of the EMU Survey of ASKAP
  - mock VLA observations of a simulated radio map of a galaxy cluster (see Fig. 1) have been provided by C. Ferrari and M. Murgia: D. Mary will perform a first test by December (?)
  - test on parallelization, for which we need students to help. Two south-african students could come: C. Ferrari and D. Mary prepare in collaboration with K. van der Heyden (P.I. of the MeerKAT Survey) an application for Poincaré jr fellowship (deadline 31/10/2010)
  - atlas of radio source morphologies in order to optimize the adopted dictionaries: to be prepared by C. Ferrari and K. Cavagnolo by December

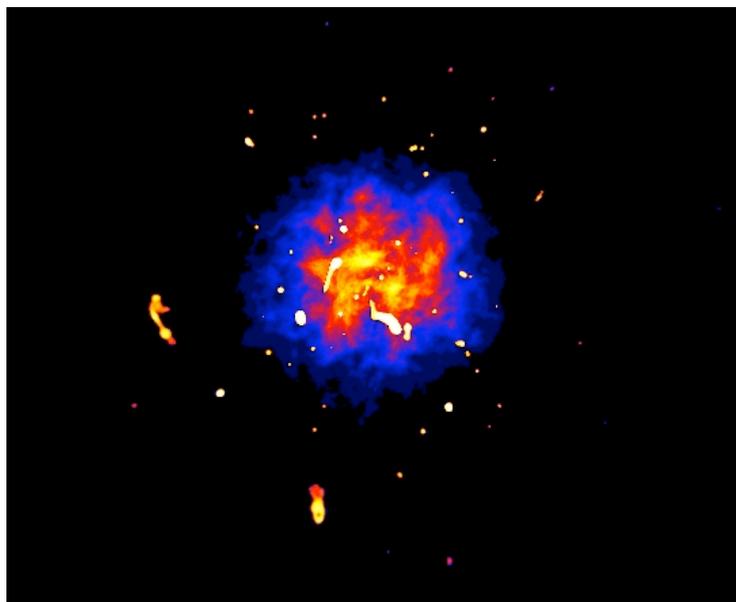


Fig. 1: Simulated radio emission of a galaxy cluster hosting several point-like and extended radio-galaxies, as well as a diffuse radio source (“radio halo”) - Courtesy M. Murgia