

# Accompanying the Optical Interferometry: the **JMMC** tools and services



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on behalf of the JMMC members

<http://www.jmmc.fr/doc/index.php?search=JMMC-POS-2100-0002>

## Mission & Organization

The Jean-Marie Mariotti Center has been created by INSU (a division of the French Council for Research) 10 years ago to offer all the potential users of interferometric facilities the best operational environment.

The mission of the JMMC is threefold:

- develop, produce, document and maintain the software necessary for the exploitation and the follow-up of interferometric equipments, especially the VLTI;
- contribute to the academic formation of non specialists;
- contribute to the prospective around new interferometric instruments.

Besides training and prospective, the main activity is software oriented system analysis and software development.

The structure of the Mariotti center is dual. It is a network of 5 French laboratories supported by a software realization center and user support located at IPAG.



Five working groups:

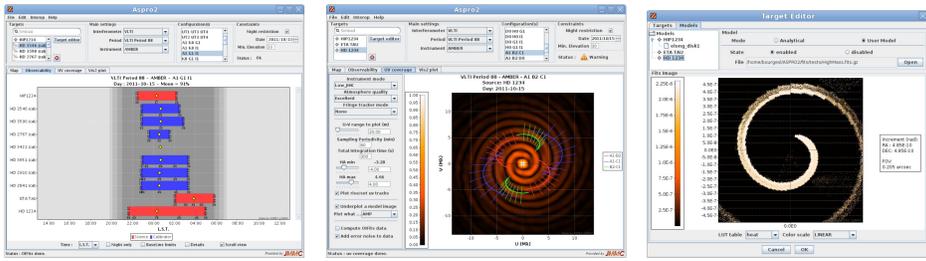
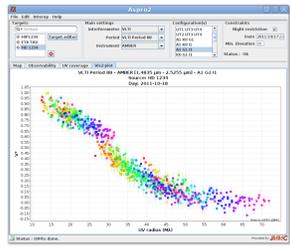
- ASPRO: the Astronomical Software to Prepare Observations
- Catalogue of calibration sources
- AMBER data processing
- Model fitting
- Image reconstruction

<http://www.jmmc.fr>

## Software Suite

### Aspro2

- New smart GUI with interactive Observability, UV Coverage and VIS2 plots
- Manage your 'observation portfolio' (setup, targets / calibrators, models) and share it with collaborators
- Define object models (analytical and FITS image)
- Produce simulated OI-FITS to test feasibility
- Interoperability with LITpro, SearchCal and VO Tools
- Supports VLTI and CHARA instruments
- Help schedule night runs
- Export as Observing Blocks



### SearchCal

- Find and select your calibrator given the instrument configuration and various filters
- Bright (V, H, K) and faint stars (K)
- Export your selection to VO tools (Aspro2 ...)

### JSDC Jmmc Stellar Diameter Calibrator (II/300)

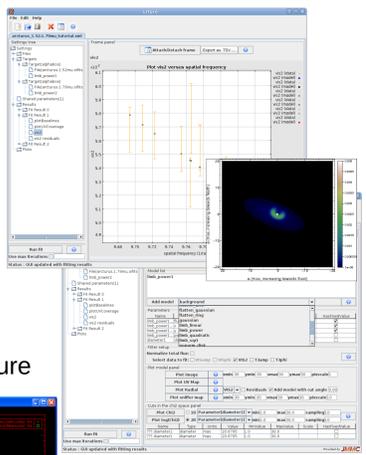
~ 40,000 computed photometric diameters  
Delivered to ESO for Calvin

### BadCal Bad Calibrator catalog

Keep track of bad calibrators reported by astronomers (HTML / CSV / VOTable)

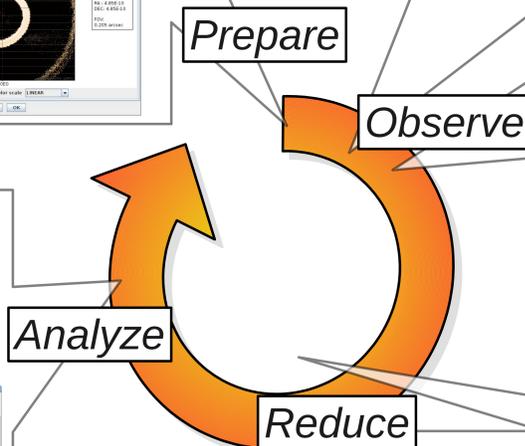
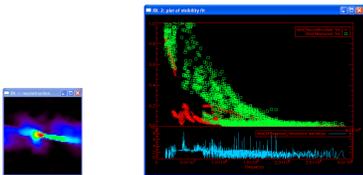
### LITpro

- Use OI-FITS files as input
- Provide wide list of analytical models
- Perform model fitting without coding
- Plot and explore your data
- Simultaneously fit several models sharing parameters
- Still limited to gray models: *polychromatic support in preparation*



### WISARD (coming soon)

- Image reconstruction based on IDL
- Will be packaged with a GUI in the future



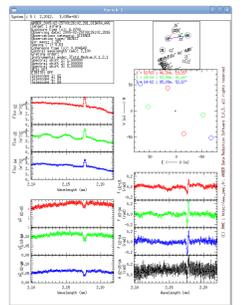
Although many of its tools are declined for interferometric instruments and arrays, JMMC provides most of its expertise outside the Consortia that build these arrays or instruments. Accordingly, JMMC does not formally participate to instrument building and their first versions of Data Reduction Systems (DRS). However we gather the expertise of several ex-consortia authors of these DRS and the day-to-day continuous experience of our instrument users to maintain several DRS. To gain knowledge about instruments during their lifetime and update accordingly their DRS is a necessity for interferometric instruments. A collaboration with ESO is in place to this effect.

### AppLauncher

- VO Dock for Astronomers
- easily ensure VO interoperability (SAMP)
- discover and automatically start VO tools for your own work flow

### AmberDRS

- The amber pipeline developed by JMMC provides one interactive and graphical environment to reduce data using C programs.
- Version 3 made by JMMC
- Optimized and more accurate noise model
- "Real instrument" model
- Use in place of version 2 to get unbiased results
- Served with a complete pipeline, including absolute calibration
- Accurate wavelength calibration for LR data



## Facts & Perspectives

### General points

- Good feedback from the community
- Long todo list for infrastructure upgrades, software maintenance and new developments
- User support will be improved thanks to a new astronomer duty: so do not hesitate to contact [jmmc-user-support](mailto:jmmc-user-support) team for support or feedback

### New developments

To complete JMMC software and service suite, the following plan is on the track:

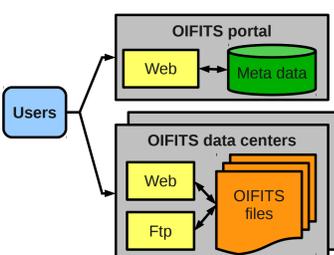
- Develop a new **OIFITS explorer** to provide one simple but efficient data management tool (plots, processing ...) as a standalone and interoperable tool or embedded in other tools
- Deliver **Image reconstruction** tools (WISARD)
- Launch **GetStar** derived from SearchCal to provide useful information on any star (magnitudes, diameters...)
- Provide a **new JSDC** version
- **Expand Aspro2** to support instrument-specific **plugins**. This work is already done for the VEGA instrument of CHARA, where the PIVOT proposal and observation management tool uses Aspro2 for scheduling requirements and observation strategy.

### Pushing Optical Interferometry in the Virtual Observatory

JMMC initiated the new team **VO4OI** aiming to push the Optical Interferometry in the VO :

- Define Optical Interferometry data model in relation with next OIFITS revision within IVOA framework
- Provide the easiest access to more and more published oidata archived onto several data center

If you are interested by providing tool or data in the VO spirit, have particular requests or want to give your feedback on this effort to serve the community, please have a look onto <http://www.jmmc.fr/vo4oi>



- Keywords:**
- Curation/Long term storage
  - Meta-data for observations
  - Harvesting system
  - Publication linked

### Usage statistics since 01.2012:

- 5700 application start up
- 680 distinct @IP: 50% FR, 20% DE, 10% USA, 20% others
- 110 download (AmberDRS) / 400 accounts
- 99.5 % availability
- 69 refereed articles citing JMMC

