



## **ASPRO-VLTI**

*A JMMC Software Dedicated to the  
Preparation of VLTI Observations*

G. Duchêne, J.-P. Berger, G. Duvert,  
G. Zins, G. Mella  
*Observatoire de Grenoble*

Astronomical Telescopes and Instrumentation 2004, Glasgow

# VLTI is now fully operational

**VLT** has now been feeding European astronomy for over 5 years.

**MIDI** has already produced many spectacular results.

**AMBER** has recently obtained its first light, including with 3 beams.



# VLTI is now fully operational

**VLT** has now been feeding European astronomy for over 5 years.

**MIDI** has already produced many spectacular results.

**AMBER** has recently obtained its first light, including with 3 beams.



*The European astronomical community has now access to **high sensitivity optical interferometry**.*

# The Jean-Marie Mariotti Center

*A French network of optical interferometry experts.*

- Created in 2000 by INSU/CNRS
- Principal nodes: Grenoble (LAOG) and Nice (OCA)



Gaspard Duchêne  
*Astronomical Telescopes and Instrumentation 2004, Glasgow*



# The Jean-Marie Mariotti Center

*A French network of optical interferometry experts.*

- Created in 2000 by INSU/CNRS
- Principal nodes: Grenoble (LAOG) and Nice (OCA)
- Main goals:
  - Optimize use by general astronomical community of optical interferometers, especially VLTI
  - Develop, distribute and maintain *softwares to prepare and analyze interferometric datasets*
  - Provide *support and formation (les Houches schools) services*



Gaspard Duchêne  
*Astronomical Telescopes and Instrumentation 2004, Glasgow*



# The ASPRO software

## *Astronomical Software to PrepaRe Observations*

Simulate observations with a variety of already existing interferometers (VLTI, GI2T, IOTA, PTI, CHARA, COAST, PdB).



Gaspard Duchêne  
*Astronomical Telescopes and Instrumentation 2004, Glasgow*

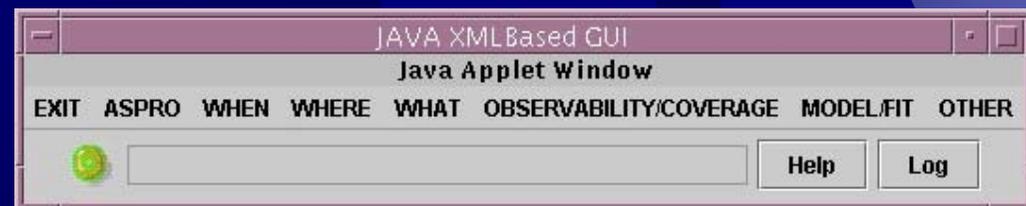


# The ASPRO software

## *Astronomical Software to PrepaRe Observations*

**Simulate observations** with a variety of already existing interferometers (VLTI, GI2T, IOTA, PTI, CHARA, COAST, PdB).

Web-based software  
with a java interface.



<http://mariotti.ujf-grenoble.fr/~aspro>

*A transportable version, to be installed locally, also exists.*

# Short presentation of ASPRO

*Users select a target and its model, the instrument and observing configuration (instrument and array).*



Gaspard Duchêne  
*Astronomical Telescopes and Instrumentation 2004, Glasgow*

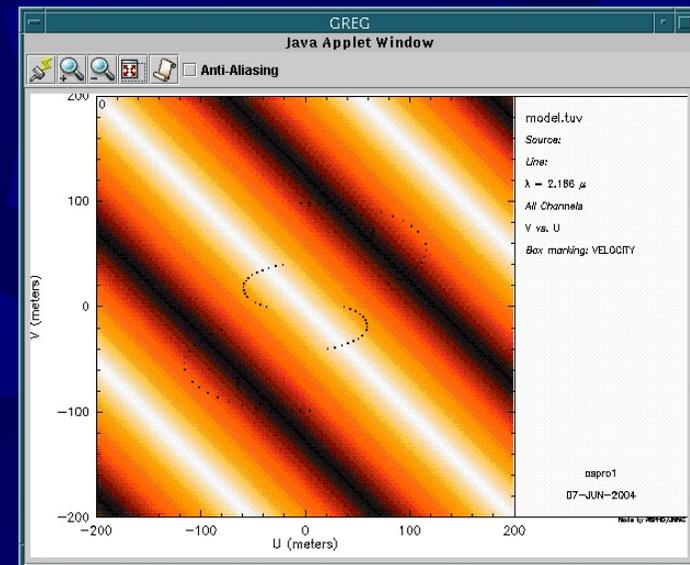


# Short presentation of ASPRO

*Users select a target and its model, the instrument and observing configuration (instrument and array).*

**Then, ASPRO ...**

- moves into the Fourier domain
- samples the  $(u,v)$  plane

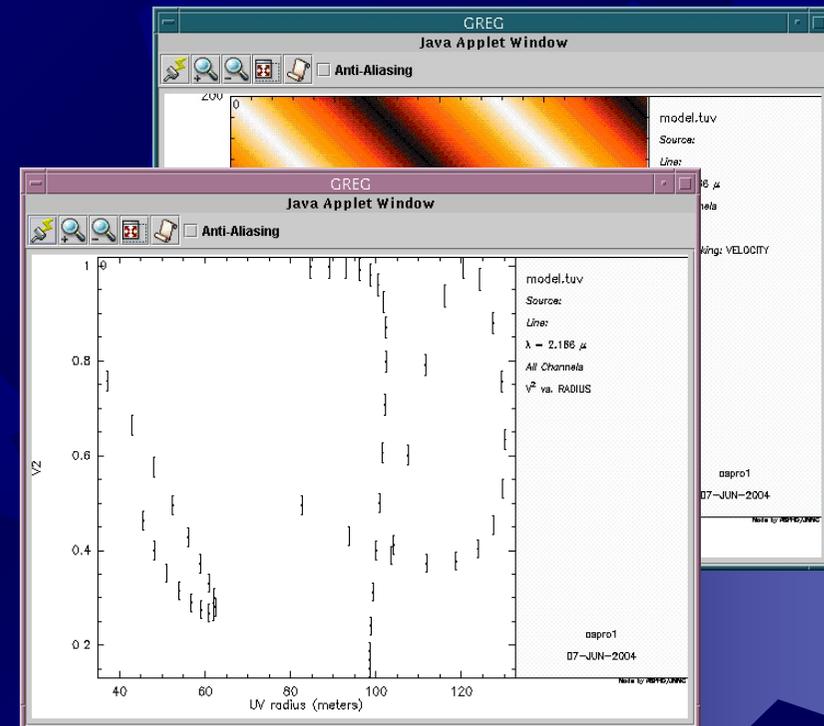


# Short presentation of ASPRO

*Users select a target and its model, the instrument and observing configuration (instrument and array).*

**Then, ASPRO ...**

- moves into the Fourier domain
- samples the  $(u,v)$  plane
- calculates visibilities
- estimates uncertainties

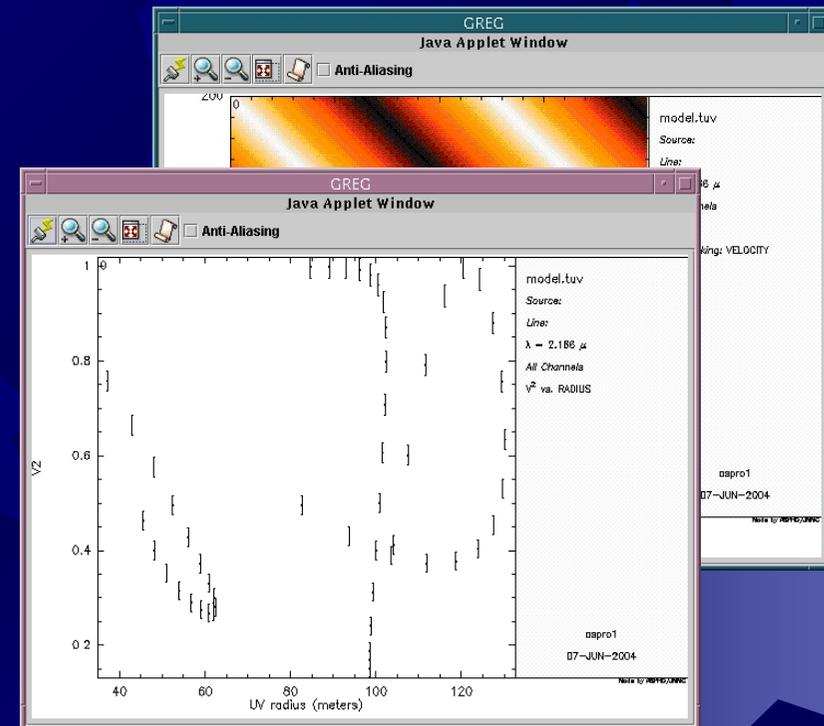


# Short presentation of ASPRO

*Users select a target and its model, the instrument and observing configuration (instrument and array).*

**Then, ASPRO ...**

- moves into the Fourier domain
- samples the  $(u,v)$  plane
- calculates visibilities
- estimates uncertainties
- adjust models on the data
- provides visualizations



# Search Calibrator

*It is crucial to observe a calibration source that is extremely well known and, if at all possible, unresolved.*

**Search Calibrator** is a software reachable through ASPRO.

# Search Calibrator

*It is crucial to observe a calibration source that is extremely well known and, if at all possible, unresolved.*

**Search Calibrator** is a software reachable through ASPRO.

It browses several databases in search of stars that are similar to the target and close to it.

It provides a list of **possible calibrators** and an estimate of the error on their visibilities.

The screenshot shows a Java Applet Window titled "SEARCH CALIBRATORS" with the following parameters:

|   |                 |
|---|-----------------|
| Science Object Name                     | T Tau           |
| Observing wavelength (microns)          | 2.166           |
| Science Object Magnitude in Search Ban  | 9.6             |
| Search for band...                      | V               |
| Magnitude range [-x,+x] to search       | 2               |
| Search Range in R.A. (degrees)          | 15              |
| Search Range in DEC. (degrees)          | 5               |
| Object expected squared visibility (V2) | 1               |
| Requested absolute error (Delta V2)     | 0.025           |
| info: min baseline used                 | 62.481857299805 |
| info: max baseline used                 | 130.23042297363 |

*Photometry (+ spectral type) → Apparent radius*

# ASPRO-VLTI

*A new software dedicated to VLTI with MIDI and AMBER*



Gaspard Duchêne  
*Astronomical Telescopes and Instrumentation 2004, Glasgow*



# ASPRO-VLTI

*A new software dedicated to VLTI with MIDI and AMBER*

- *The best tool to prepare VLTI observing proposals for “normal” observations (ASPRO otherwise)*
- Includes input from a panel of international ASPRO users

# ASPRO-VLTI

*A new software dedicated to VLTI with MIDI and AMBER*

- *The best tool to prepare VLTI observing proposals for “normal” observations (ASPRO otherwise)*
- Includes input from a panel of international ASPRO users
- Only proposes ESO-supported options/configurations
- Realistic (on-sky) sensitivities and overheads
- Updates once per Period at least

# ASPRO-VLTI

*A new software dedicated to VLTI with MIDI and AMBER*

- *The best tool to prepare VLTI observing proposals for “normal” observations (ASPRO otherwise)*
- Includes input from a panel of international ASPRO users
- Only proposes ESO-supported options/configurations
- Realistic (on-sky) sensitivities and overheads
- Updates once per Period at least
- Reachable through the JMMC web-page:  
<http://mariotti.ujf-grenoble.fr/>
- Planned release: September 2004



Gaspard Duchêne  
*Astronomical Telescopes and Instrumentation 2004, Glasgow*



# Users' support

- Help menus and **user's manual**

# Users' support

- Help menus and **user's manual**
- **FAQs** page available on the website
- **Mailing list** for general information regarding the JMMC software (e.g., new version)

# Users' support

- Help menus and **user's manual**
- **FAQs** page available on the website
- **Mailing list** for general information regarding the JMMC software (e.g., new version)
- **Tutorial** version to illustrate a routine run of the software and present the basics of interferometry

# Users' support

- Help menus and **user's manual**
- **FAQs** page available on the website
- **Mailing list** for general information regarding the JMMC software (e.g., new version)
- **Tutorial** version to illustrate a routine run of the software and present the basics of interferometry

*Details available on the JMMC webpage as soon as ASPRO-VLTI is released to the public.*

# Conclusions

- Jean-Marie Mariotti Center develops and distribute **softwares to prepare observations** with optical interferometers that are now available.

# Conclusions

- Jean-Marie Mariotti Center develops and distribute **softwares to prepare observations** with optical interferometers that are now available.
- In particular, **ASPRO-VLTI** is a simple and realistic tool to simulate **MIDI and AMBER** observations.

# Conclusions

- Jean-Marie Mariotti Center develops and distribute **softwares to prepare observations** with optical interferometers that are now available.
- In particular, **ASPRO-VLTI** is a simple and realistic tool to simulate **MIDI and AMBER** observations.
- In addition to softwares, a variety of **support services** are offered by JMMC to the French and European astronomical communities, especially to non-experts.

# Conclusions

- Jean-Marie Mariotti Center develops and distribute **softwares to prepare observations** with optical interferometers that are now available.
- In particular, **ASPRO-VLTI** is a simple and realistic tool to simulate **MIDI and AMBER** observations.
- In addition to softwares, a variety of **support services** are offered by JMMC to the French and European astronomical communities, especially to non-experts.

<http://mariotti.ujf-grenoble.fr/>



Gaspard Duchêne  
*Astronomical Telescopes and Instrumentation 2004, Glasgow*

