

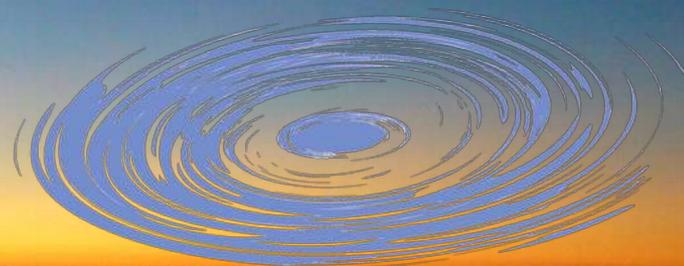


Imaging & spectroscopy

March 16th, 2016
F. Millour



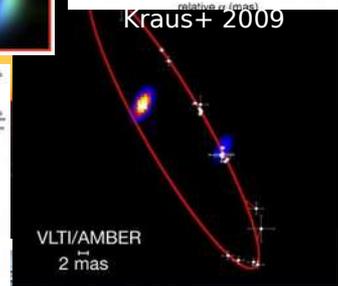
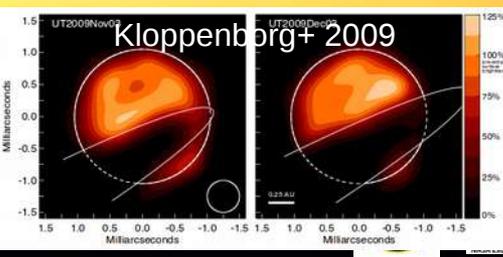
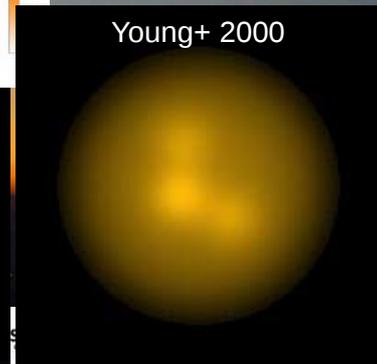
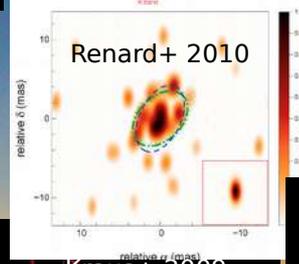
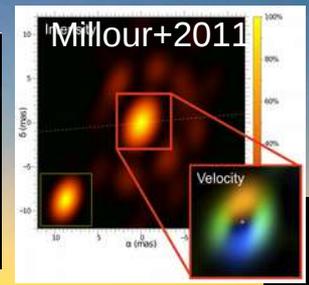
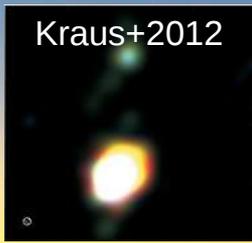
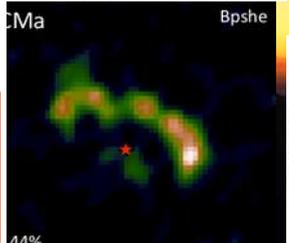
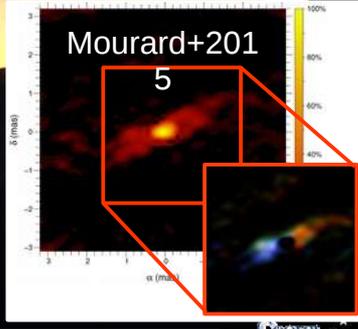
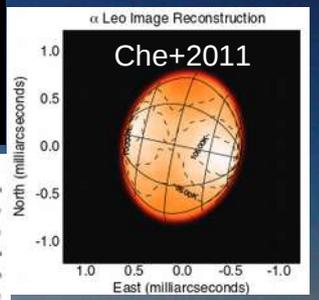
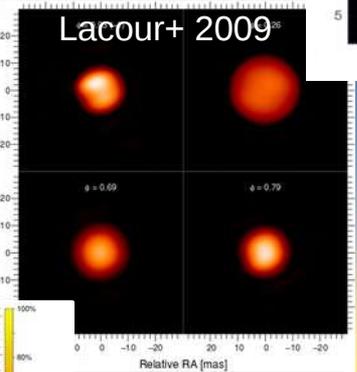
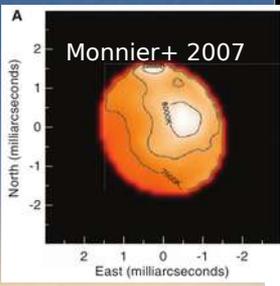
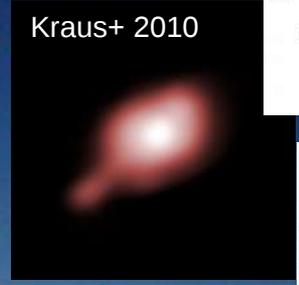
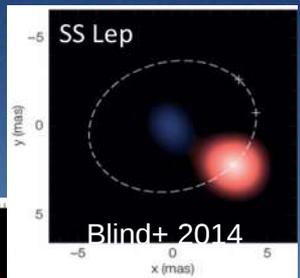
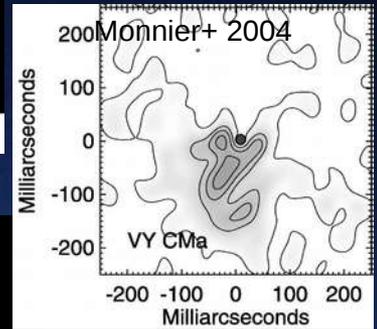
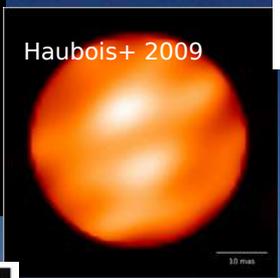
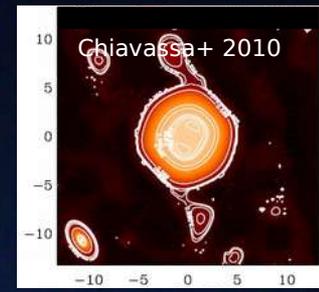
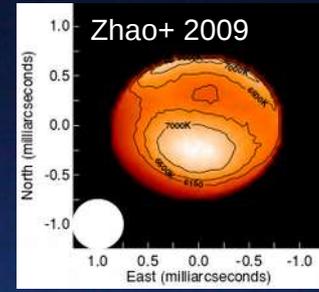
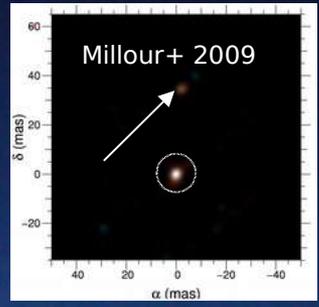
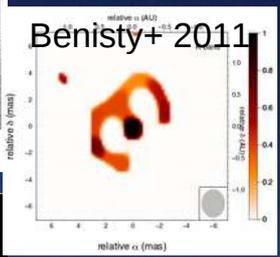
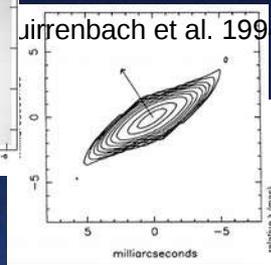
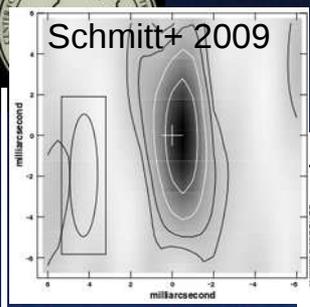
Observatoire
de la CÔTE d'AZUR



LAGRANGE



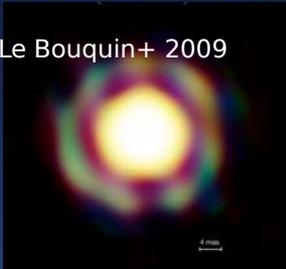
Images in 2015



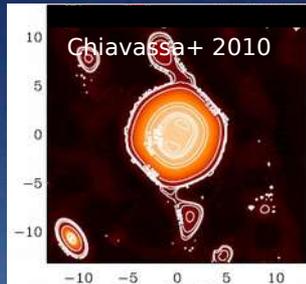


Colour images

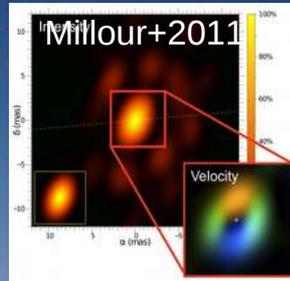
Le Bouquin+ 2009



Chiavassa+ 2010



Millour+2011



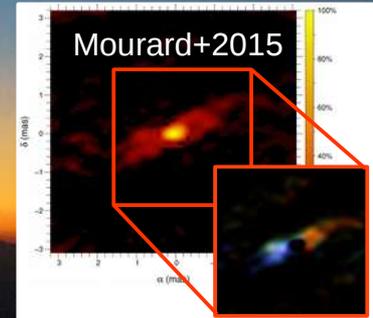
Kraus+2012



Hillen et al. 2016



Mourard+2015





Phases are important

- But not easily measured
 - $N_{\text{tel}}(N_{\text{tel}}-1)/2$ Differential phases
 - $(N_{\text{tel}}-1)(N_{\text{tel}}-2)/2$ Closure phases
 - $(N_{\text{tel}}-2)(N_{\text{tel}}-3)/2$ Quad-phases
- } Kernel phases

Diff. Phases not used in “gray” image reconstruction software

(MIRA, WISARD, BSMEM, MACIM)

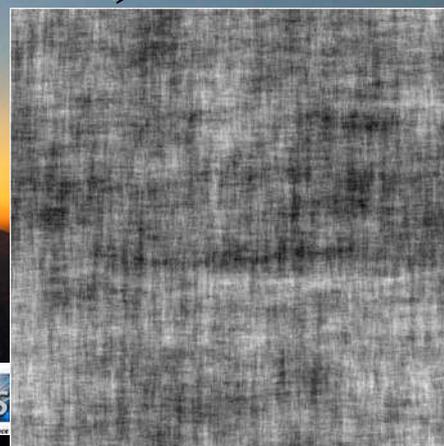
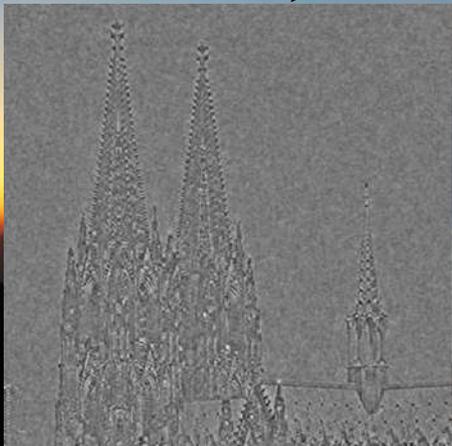
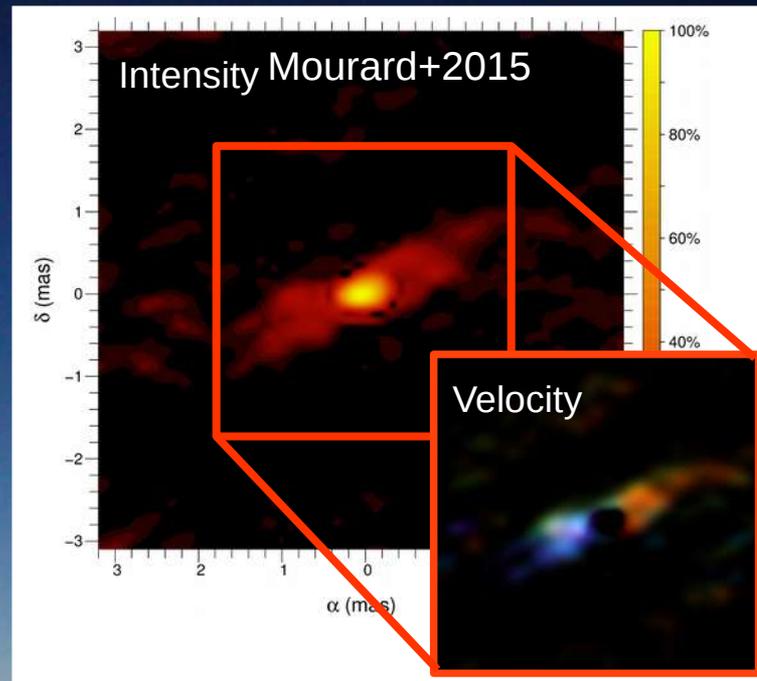
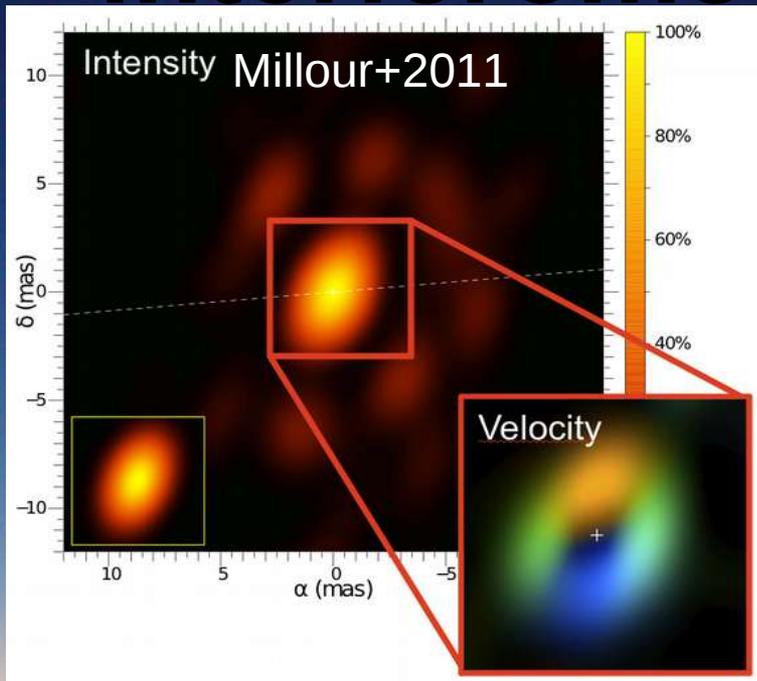




Image cubes with interferometry



CO bandhead on Mira (Fabas et al. submitted)

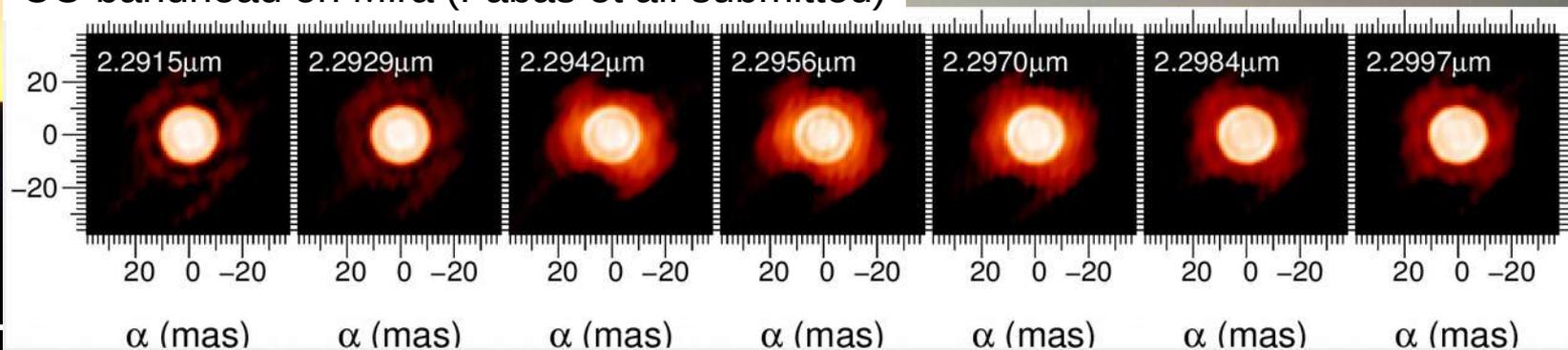
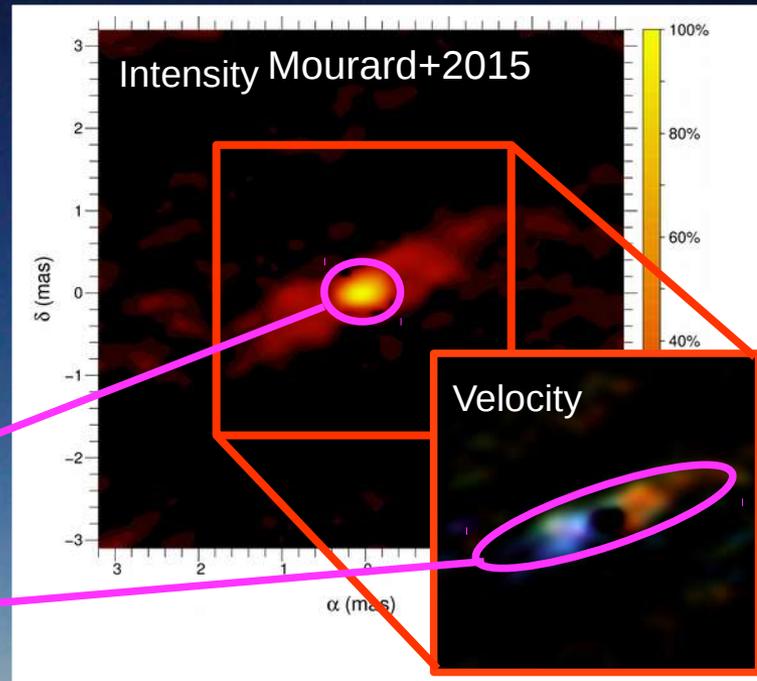
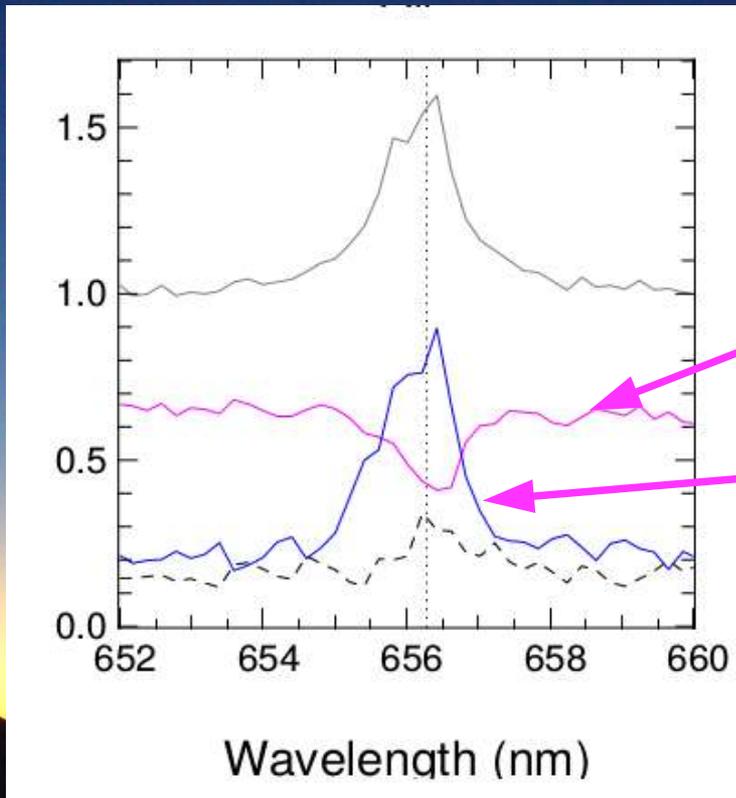




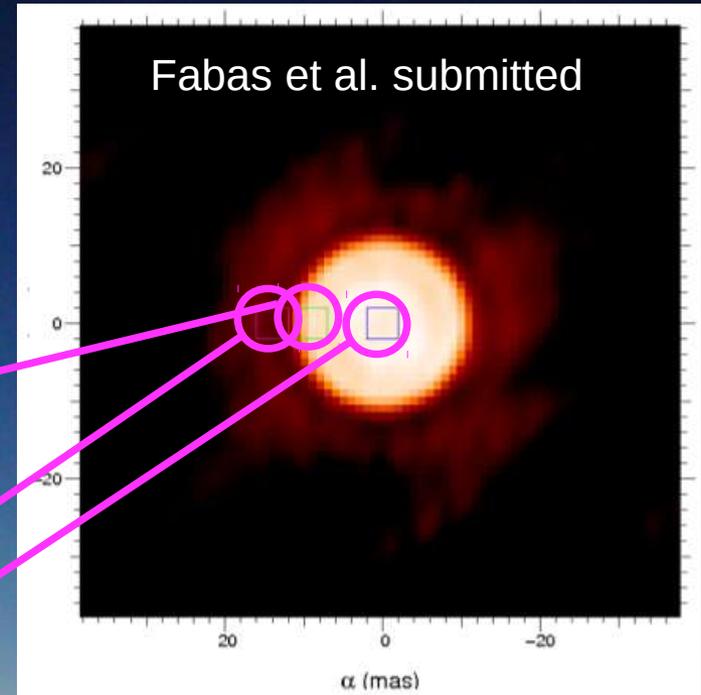
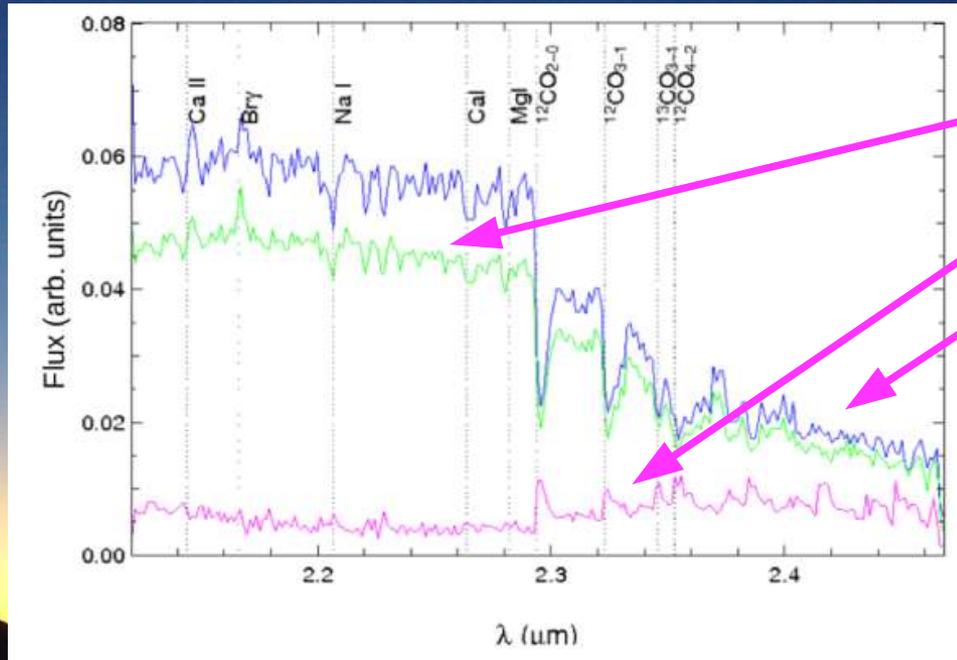
Image cubes with interferometry



0.2 mas resolution = 500 picoradians



Image cubes with interferometry





Existing chromatic software

- **Self-cal / MIRA**
→ self-cal.oca.eu
- **PAINTER**
→ github.com/andferrari/PAINTER.jl
- **MIRA-3D**
- **SQUEEZE**
→ github.com/fabienbaron/squeeze
- **New: IRBIS**



How to make image reconstruction user-friendly?

- **What language?**
 - **Yorick/C++, IDL, Julia, Matlab, C/Plplot, C/ESOREX**





Image reconstruction discussion

- **G. Duvert:** common data exchange between imaging softwares, work in progress (draft circulated)
- **S. Kraus:** common interface: working group at EII led by E. Thiébaud
- **J. Young:** probably not possible to use a common language as everyone has his own habits
- **P. Stee:** formation? US proposal contains an exchange program, EII is asking for more funds for VLTI schools
- **P. Kervella:** image reconstruction for OLBI is disappointing because of low number of telescopes.