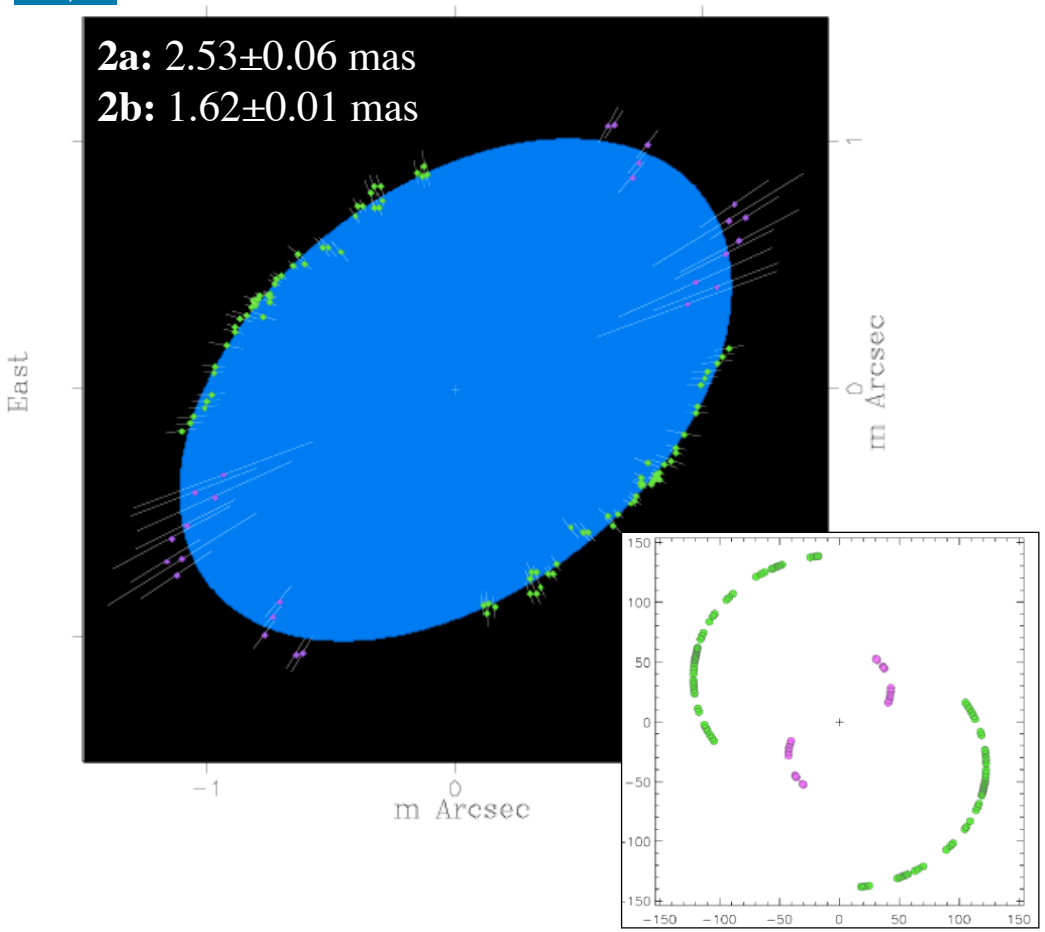
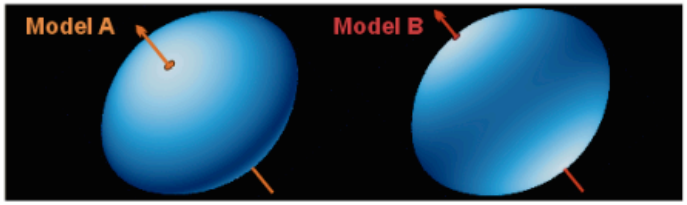
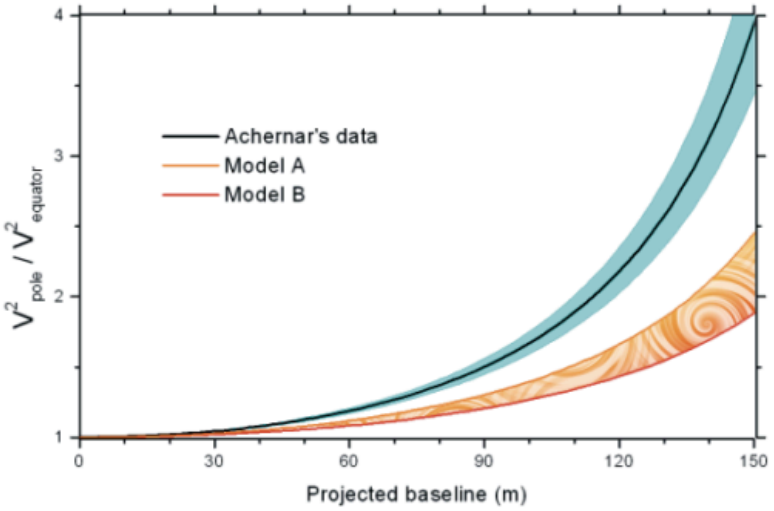
Achernar: a *very* fast rotator !







Challenge for the models..

Differential rotation ?

Meridian circulation ?

Critical rotation ?

Circumstellar disk ?

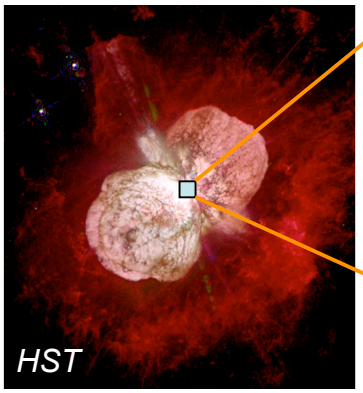
Flattening: 1.56 ± 0.05 !!

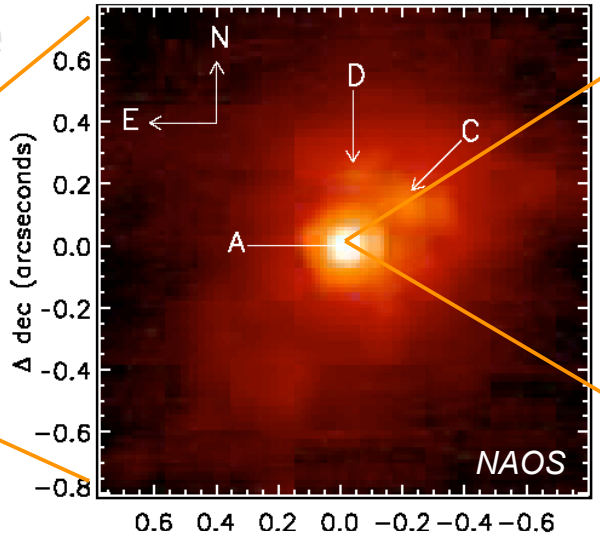
Altaïr: **1.14 ± 0.03** (210 km/s, Van Belle et al. 2002)

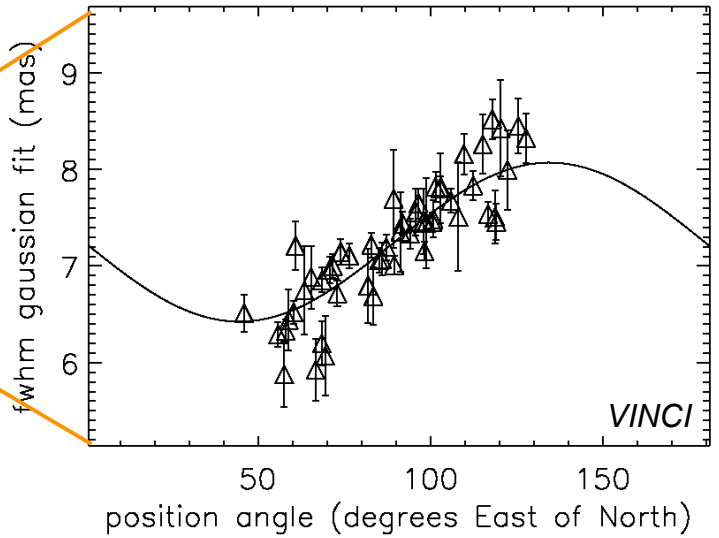
Large programme foreseen with AMBER

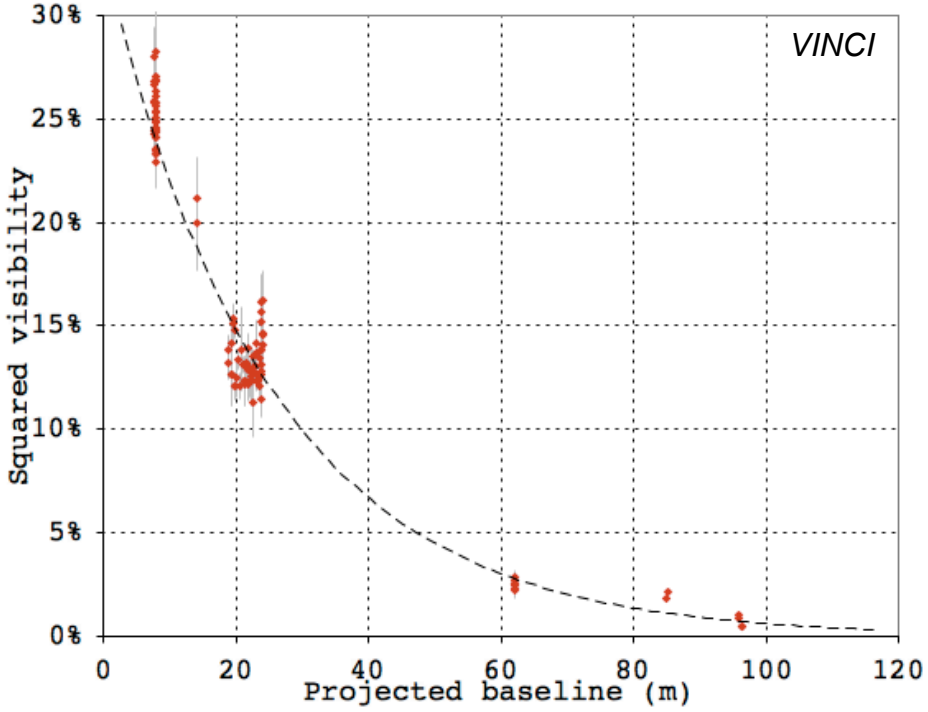
Domiciano, Kervella, Jankov, et al. 2003, *A&A* 407, L47

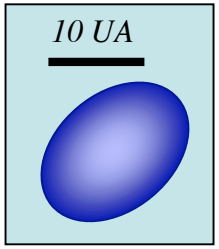
η Carinae

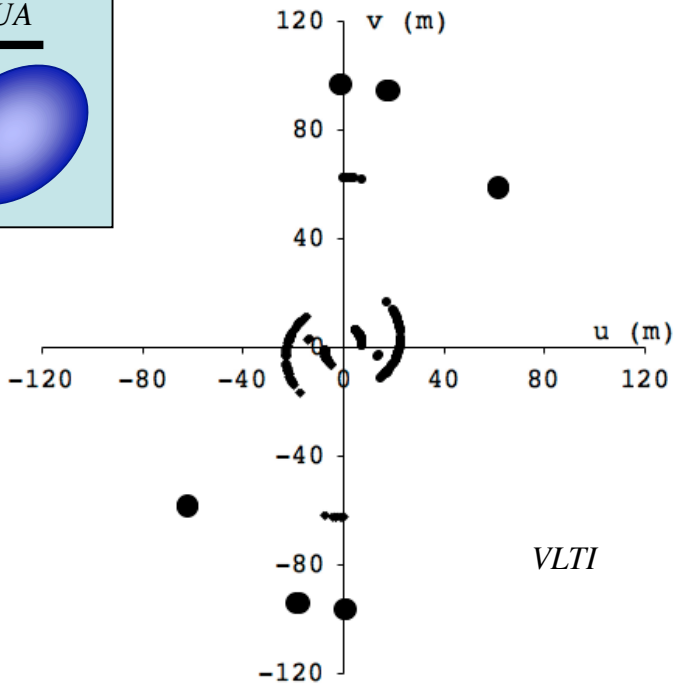












Van Boekel, Kervella, Schoeller et al. 2003, *A&A* 410, L37

The Main Sequence

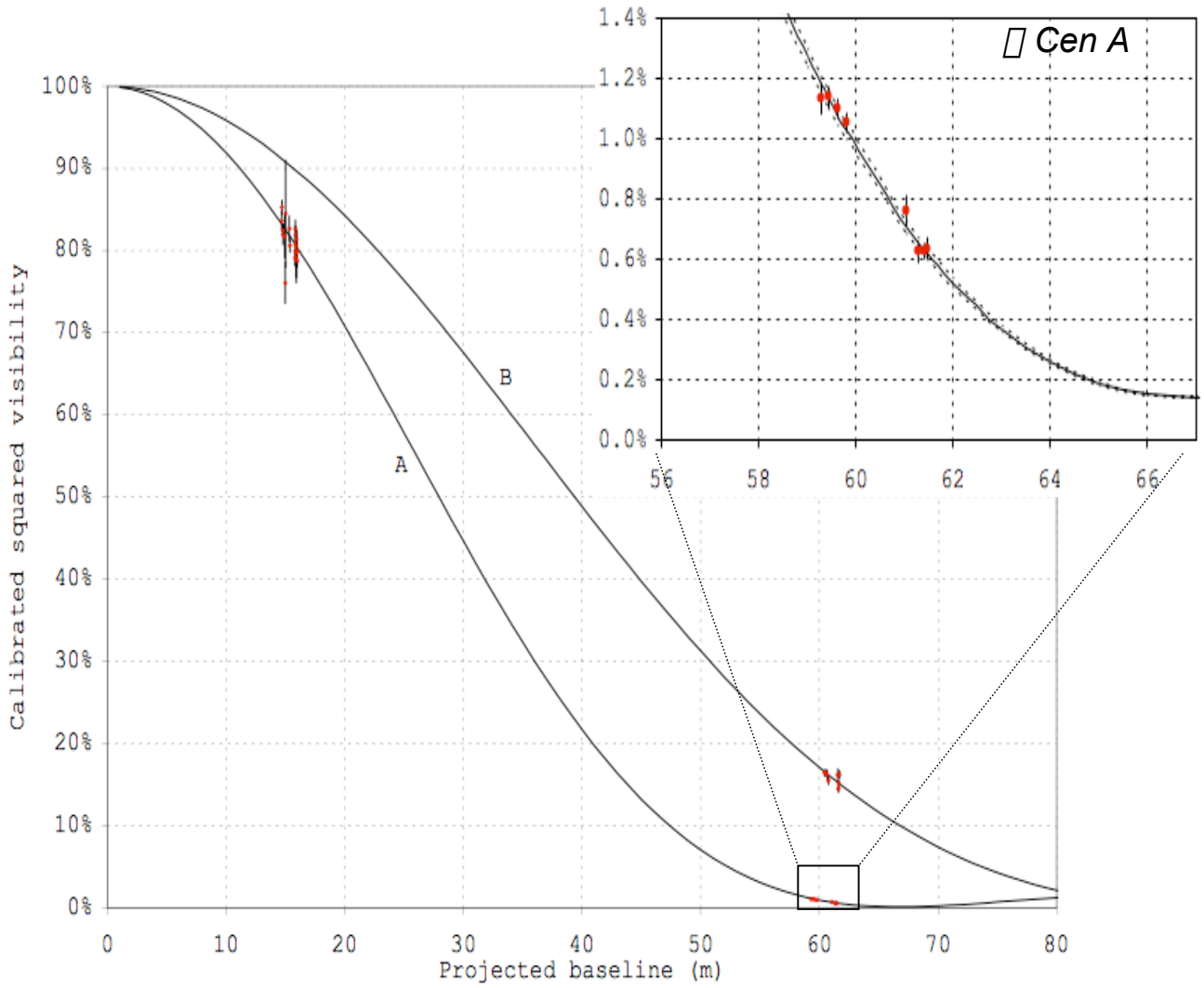
α Cen A & B

First direct measurement:

A = 1.228 ± 0.005 $D_\odot$

B = 0.870 ± 0.007 $D_\odot$

Identical to the CESAM models constrained by asteroseismology to a precision of **0.1%**



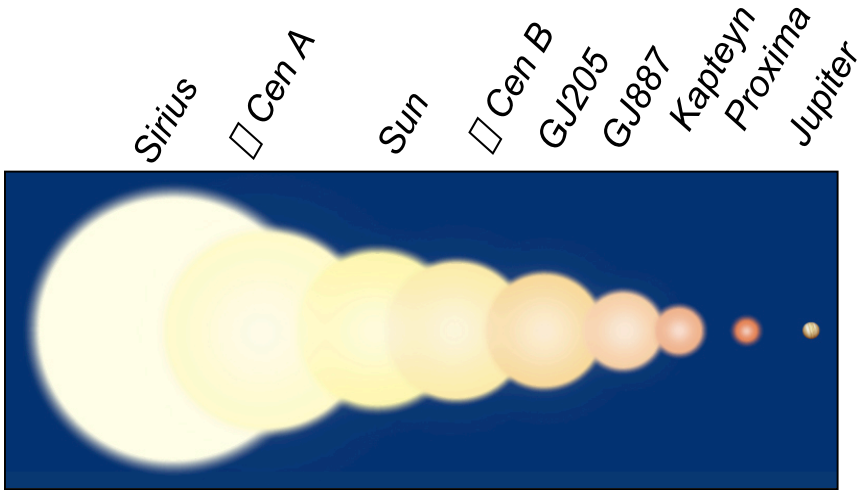
Kervella, Thévenin, Ségransan, et al. 2003, *A&A* 404, 1087

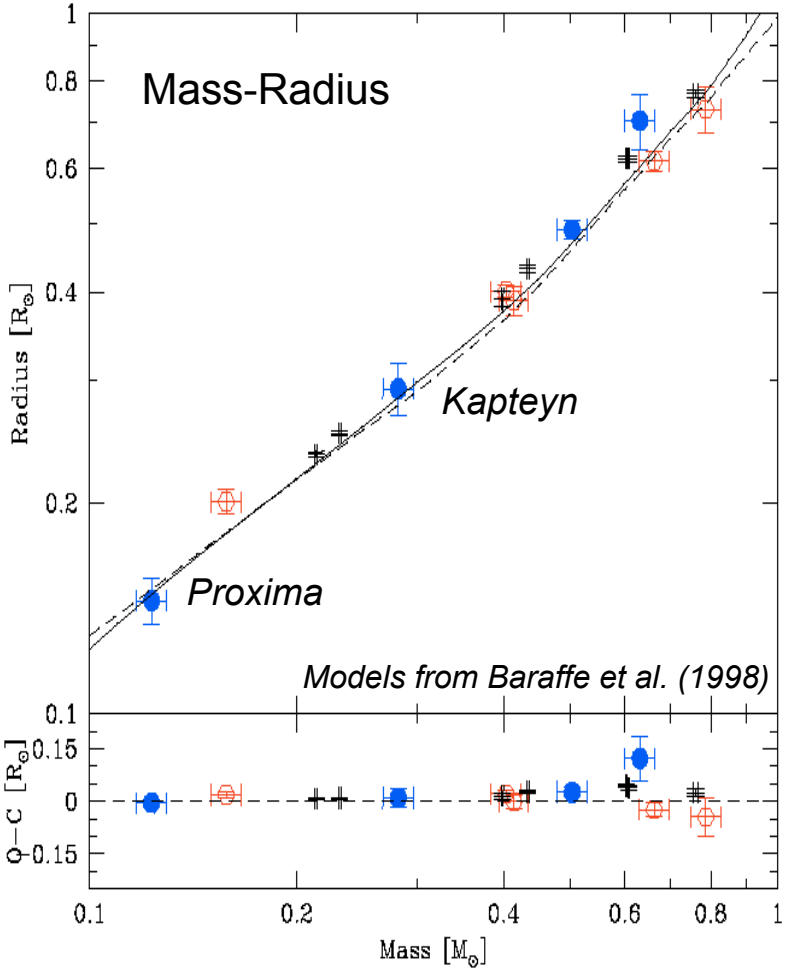
Very low mass stars

VINCI has measured the size of four VLMS, including ***Proxima*** for the first time with **UT1-UT3**

$D_{Proxima} = 0.145 \pm 0.011\ D_{\odot}$

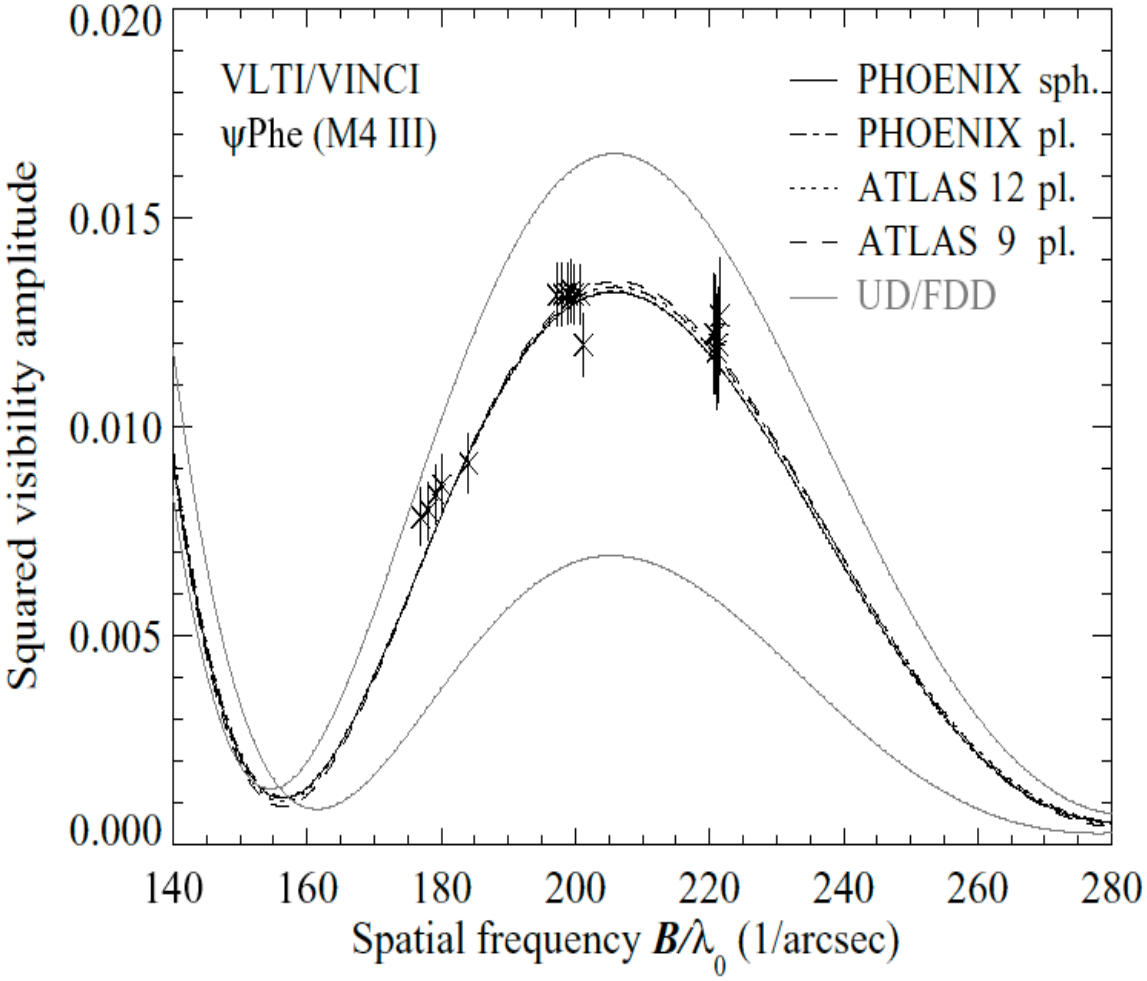
Important step towards **brown dwarfs and exoplanets**

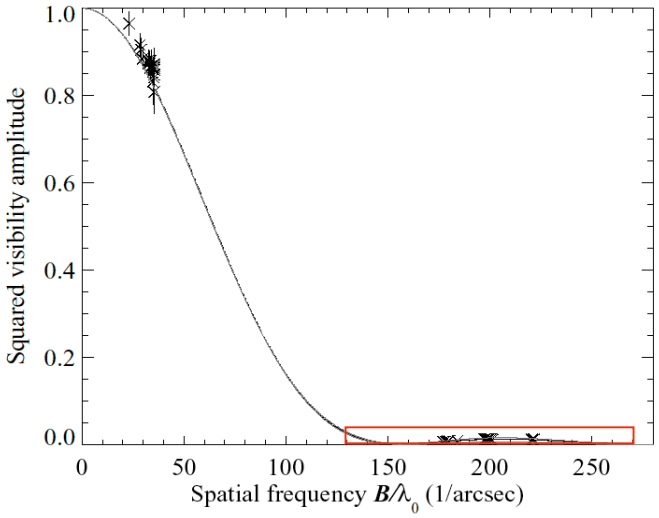


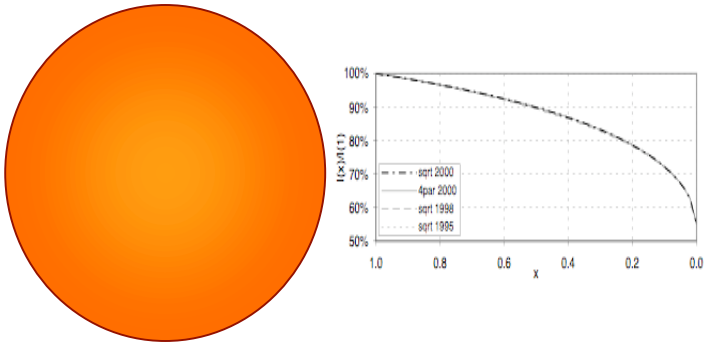


Ségransan, Kervella, Forveille, Queloz 2003, *A&A* 397, L5

Limb darkening







Next step: the Cepheid *L Car* with AMBER

Wittkowski, Aufdenberg, Kervella, *A&A*, 413, 711 (2004)

Stars are ***not*** **uniform disks**

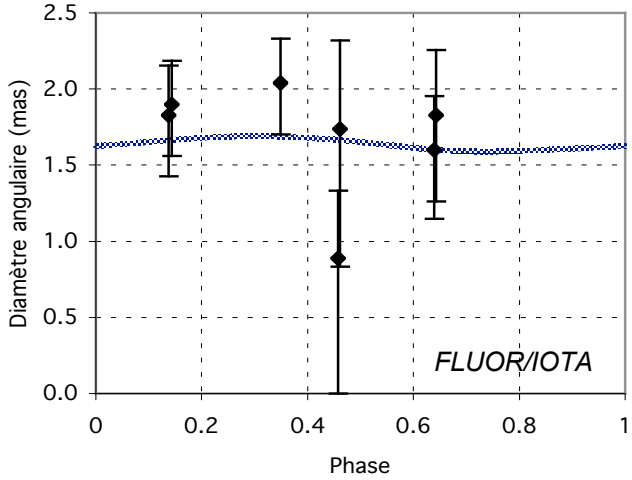
The limb darkening tells us a lot about the atmosphere, opacities,...

Difficult measurements, as visibilities are very low

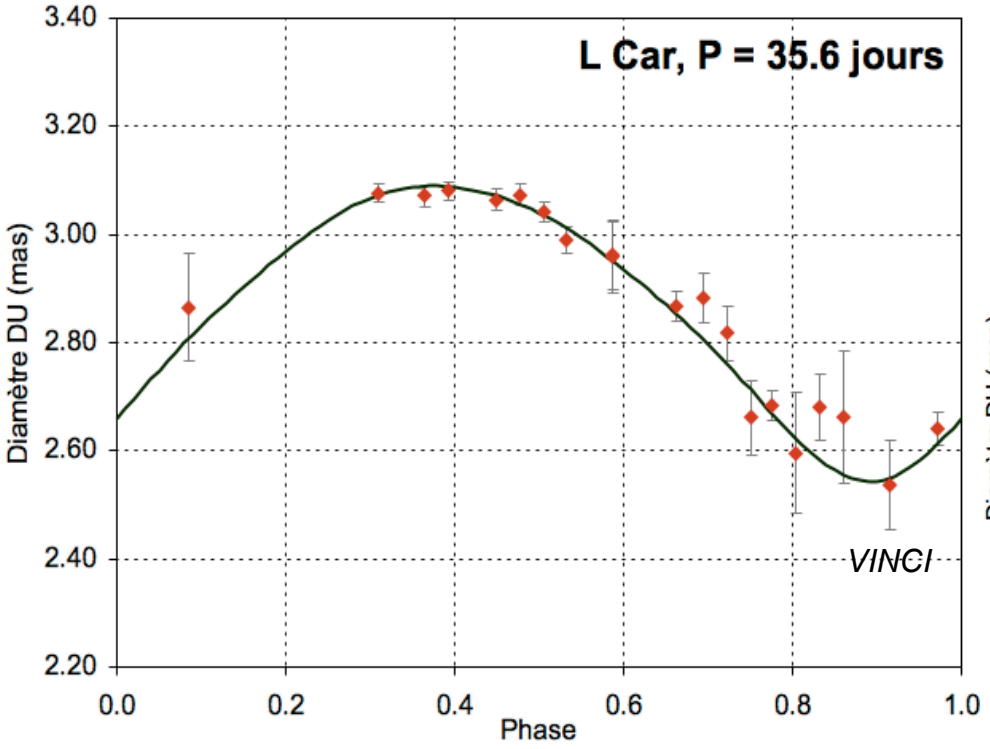
Will be easy with the ATs

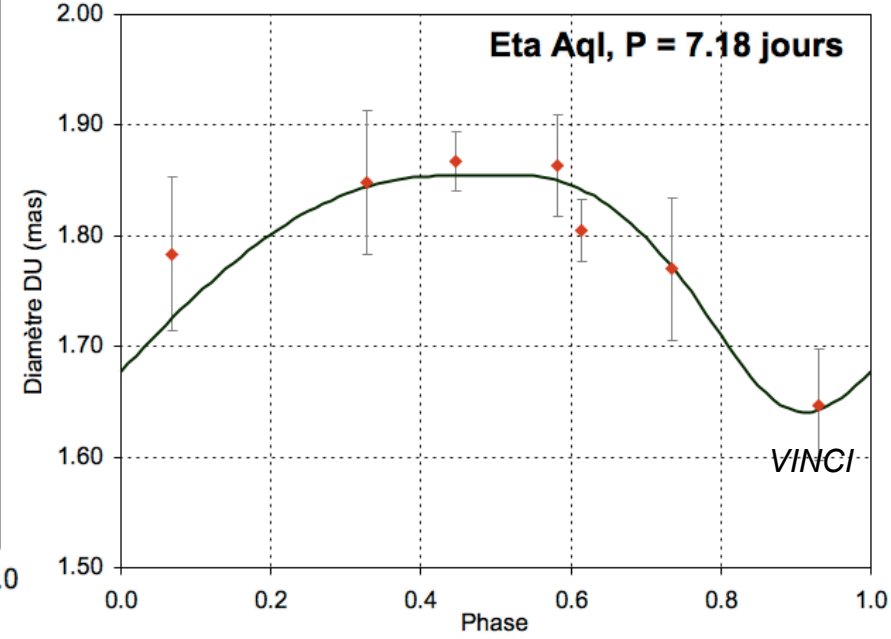
Cepheids

- Direct measurement of the distance through the **parallax of the pulsation**
- **Independent** calibration of the **zero point** of the Period-Luminosity relation



Kervella et al., *A&A*, 367, 876 (2001)





Kervella, Nardetto, Bersier et al. (I), *A&A*, in press (2004)