

Thank You

The Project

'Probing the binarity of the brightest early type stars in the Galactic Center region'

- IRS 16 - Sources:
- SW, lightcurve, Ott+99
 - NE, radial velocity, Pfuhl+13
 - NW ??
 - C ??



- Challenging:
- IRS16 Sources, $H > 11$
 - off-axis guiding, $30''$
 - > only possible under best (technical & weather) conditions

Results from the Galactic Center with PIONIER

Senol Yazici, University of Cologne

- outline
- project
 - attempts
 - backup

Senol Yazici
2013-01-14

PIONIER
science meeting

Outlook

- new attempt towards the Galactic Center with PIONIER in June 2014 (equipped with RAPID?)
- confirm/improve/constrain results of Backup GCR FG with low resolution and (hopefully) better conditions
- GRAVITY @ Paranal expected late-2014/early-2015
 - IRS16 C and IRS16 NW crucial for astrometry in GCR
 - GCR FG interesting Science Case

What can we say about GCR FG?

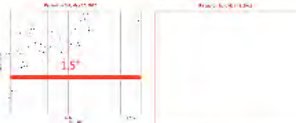
(not tooo much... but)

- Object at ~ 3.6 kpc (Mauerhan+2010) towards the Galactic Center:
 - > diameter > 11.1 mas ~ 40 AU ... minimum size of 'the disk'
 - > FWHM $> \sim 80$ mas ~ 290 AU ... upper limit for bright 'disk'
 - Possible origins of extended radiation:
 - a) extended stellar atmosphere?
 - b) (ultra)compact H2Region?
 - b) face on debris disk?
- > Further observations needed:
- shorter Baselines (ATs with new RAPID Detector?)
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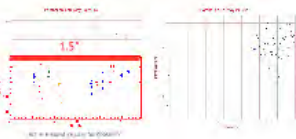


The Attempts

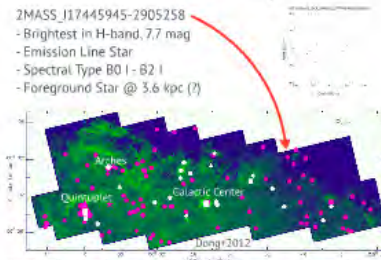
May 2012



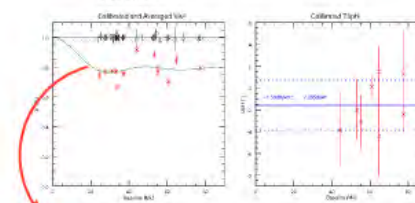
May 2013



The Backup



Reduction & Calibration



- Best-fit Model Parameters (L1745, Taken from Brogi+2008):
- point source: flux weight = 0.89
 - uniform disk: flux weight = 0.11, diameter = 11.1 mas

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3



IRS16

NE

NW

CC

C

SW



The Project

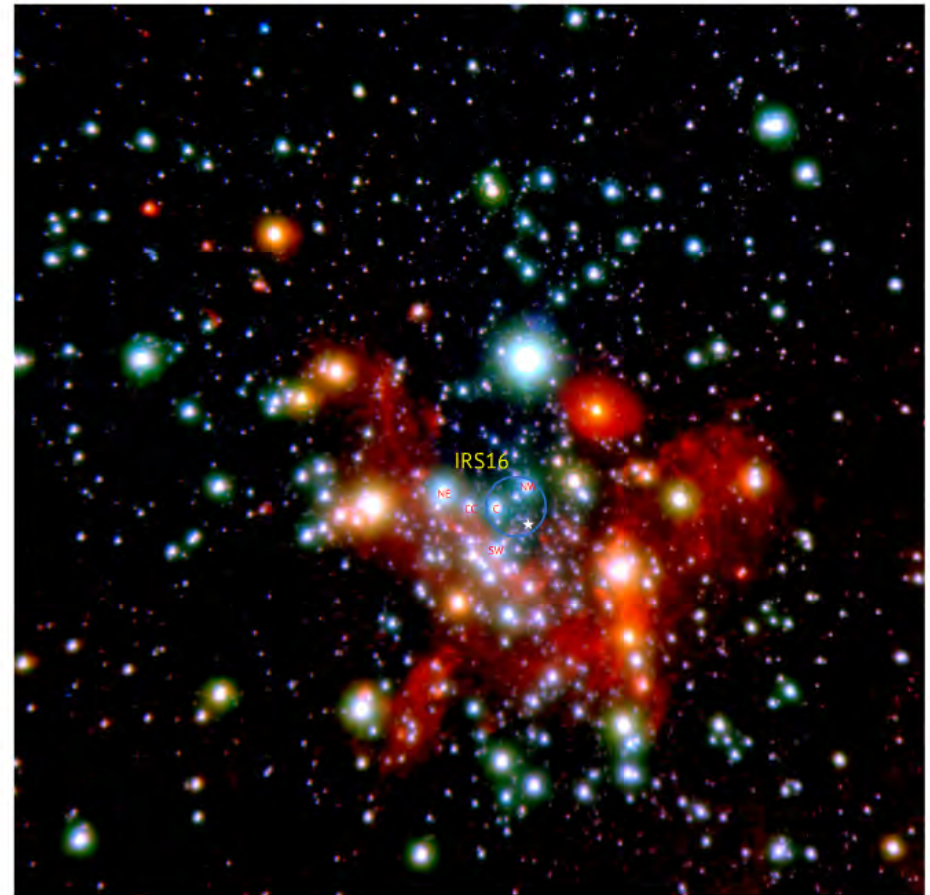
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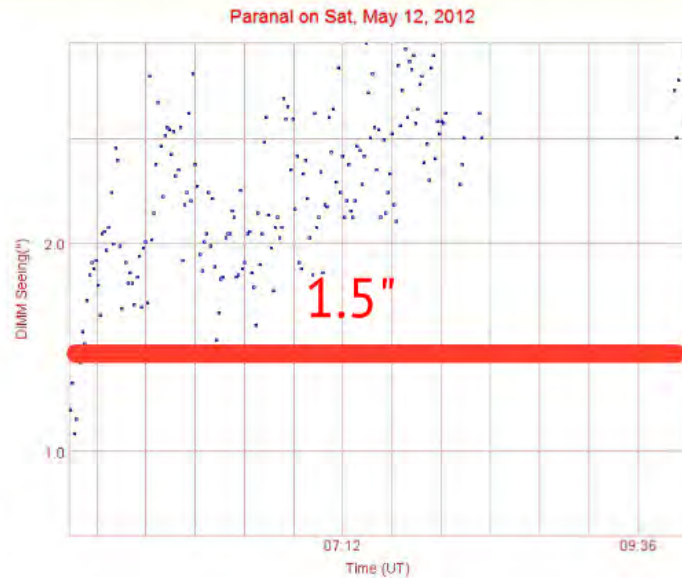
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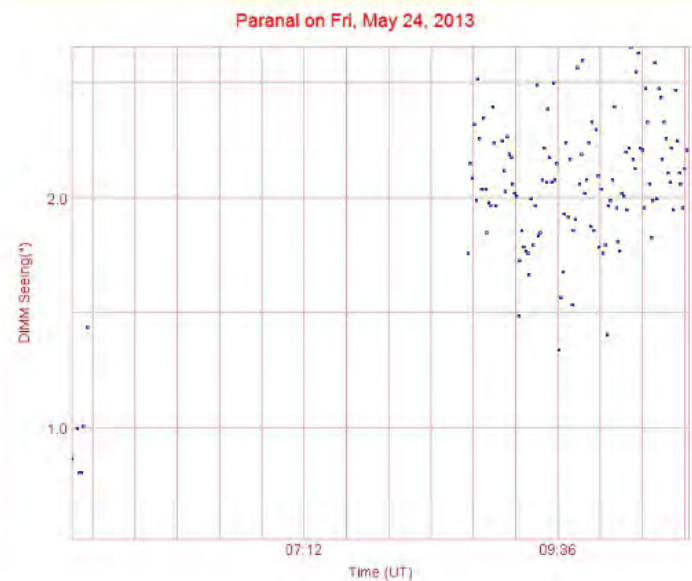
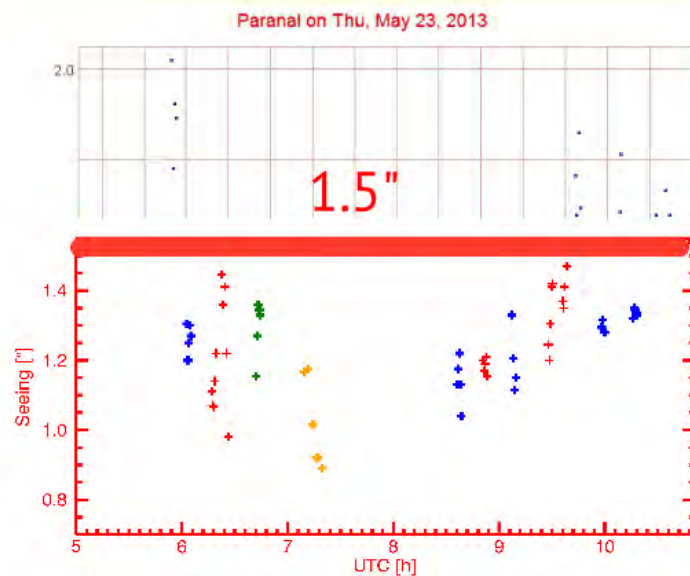


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May
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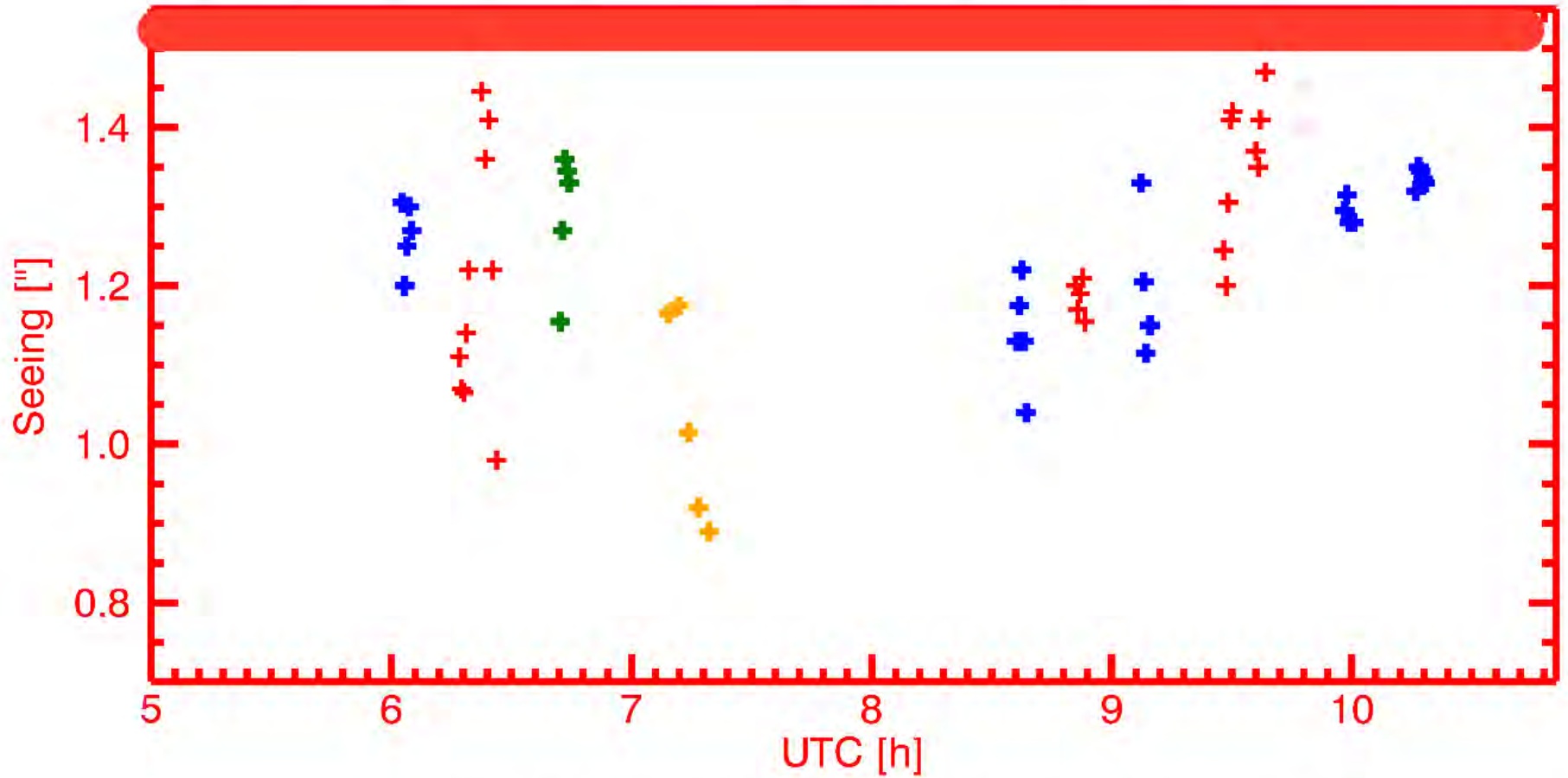


May
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AO in K-band crucial for GRAVITY

1.5"

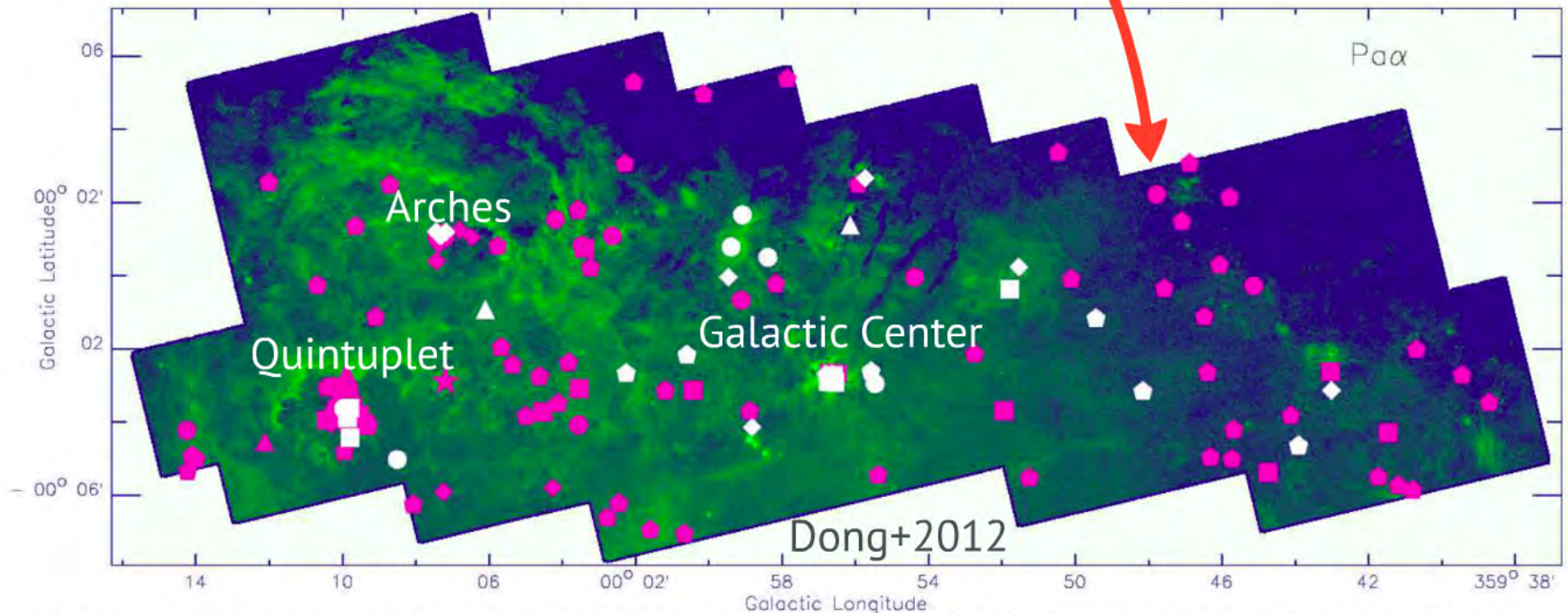
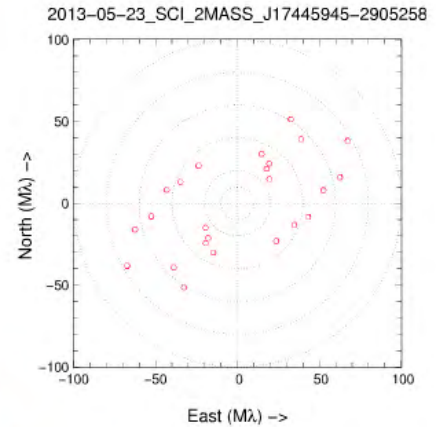


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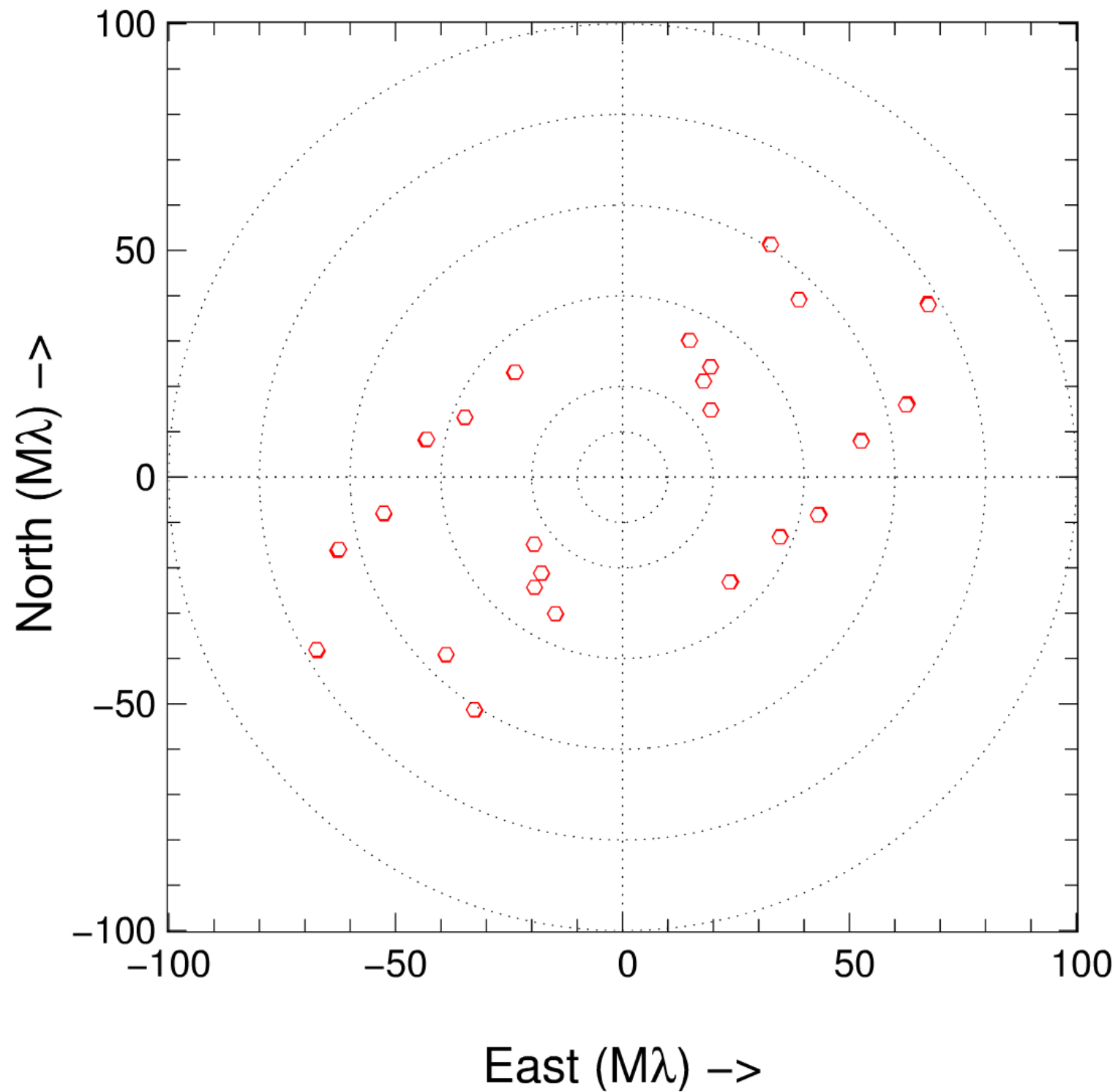
2MASS_J17445945-2905258

- Brightest in H-band, 7.7 mag
- Emission Line Star
- Spectral Type B0 I - B2 I
- Foreground Star @ 3.6 kpc (?)



'diamond': WNL stars, 'square': WC stars, 'triangle': WNE stars, 'circle' OB supergiants, 'star symbols': LBV stars, 'pentagon': no available spectroscopic identification, 'white' indicates sources with X-ray counterparts

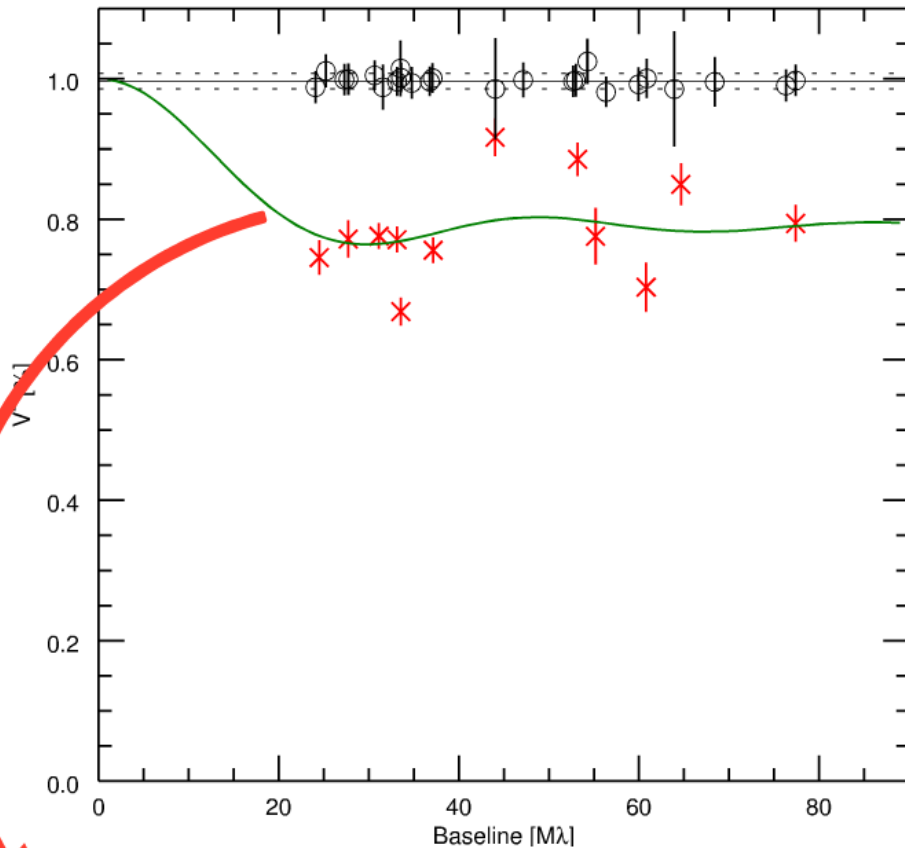
2013-05-23_SCI_2MASS_J17445945-2905258



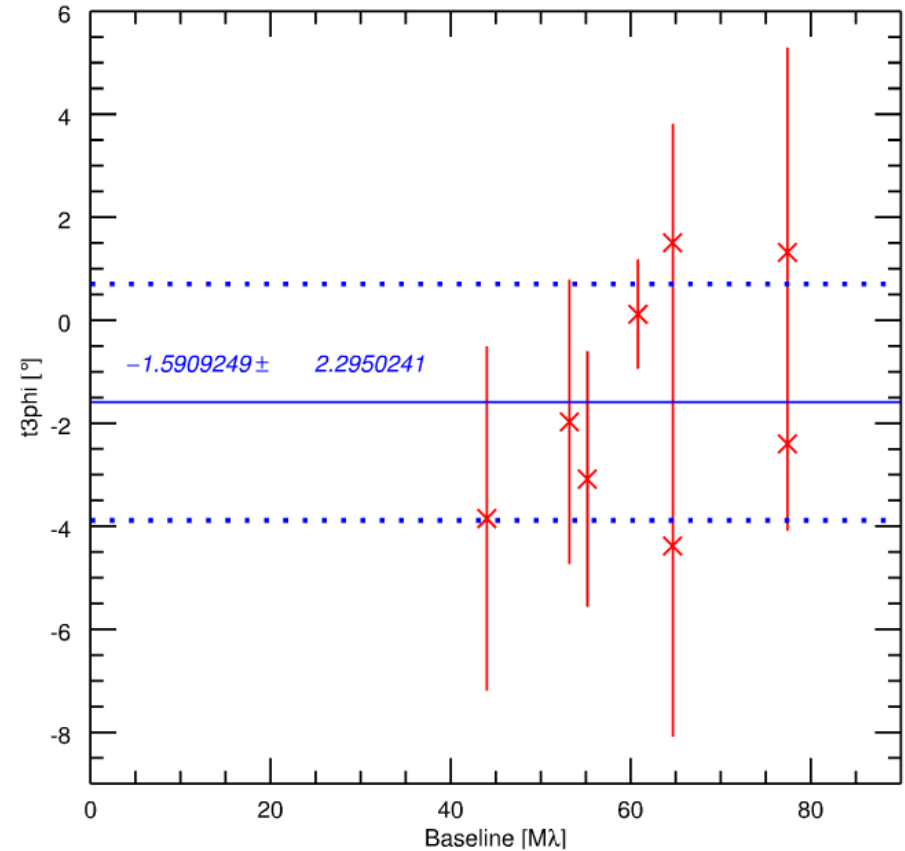
Reduction & Calibration

Le Bouquin+2011

Calibrated and Averaged Vis²



Calibrated T3phi



Best-fit Model Parameters (LITpro, Tallon-Bosc+2008) :

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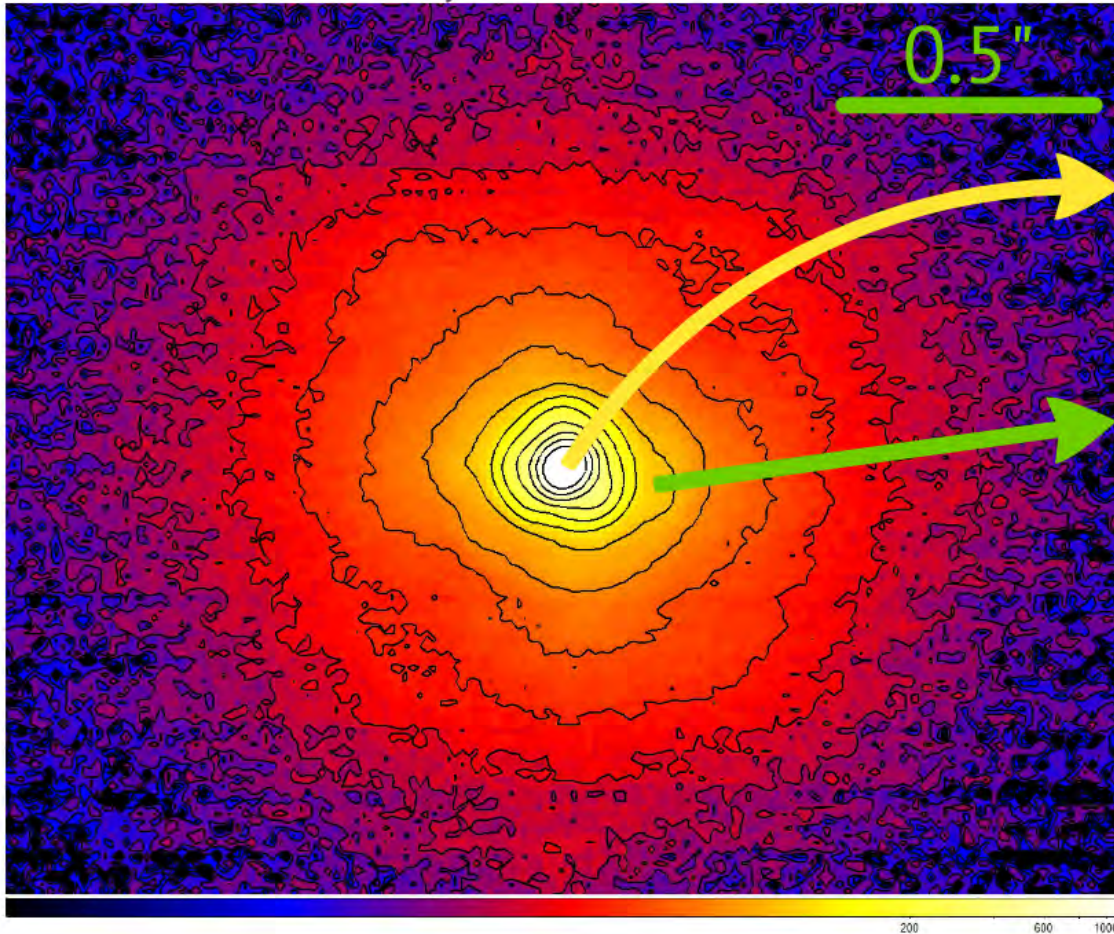
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NACO Observations

June 27 2013, Ks-band



upper limits of extension

bright region

FWHM ~ 80 mas ~ 290 AU

faint region

10% of Peak ~ 200 mas ~ 700 AU

Polarisation of 5%

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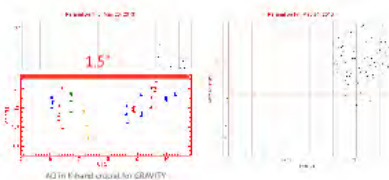
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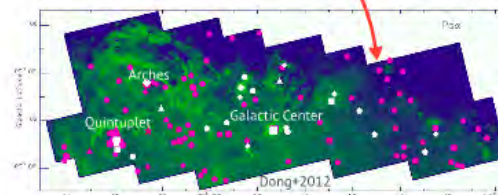


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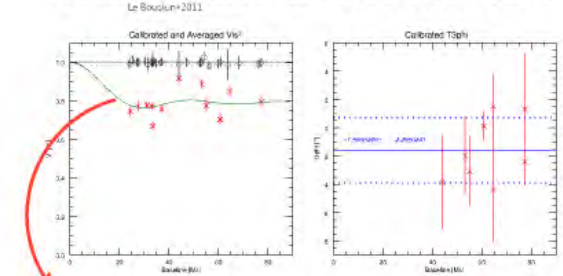
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