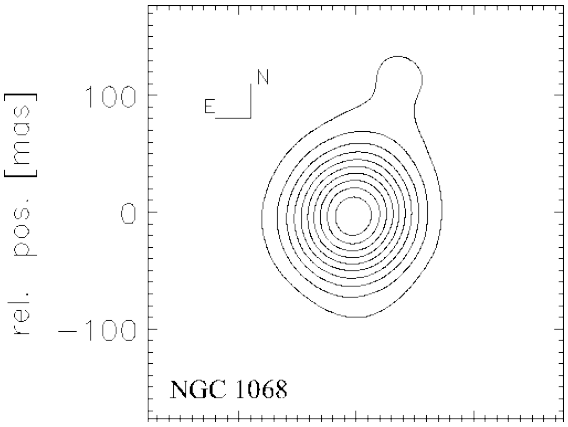
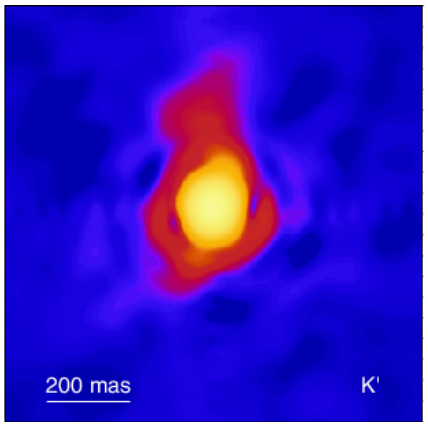
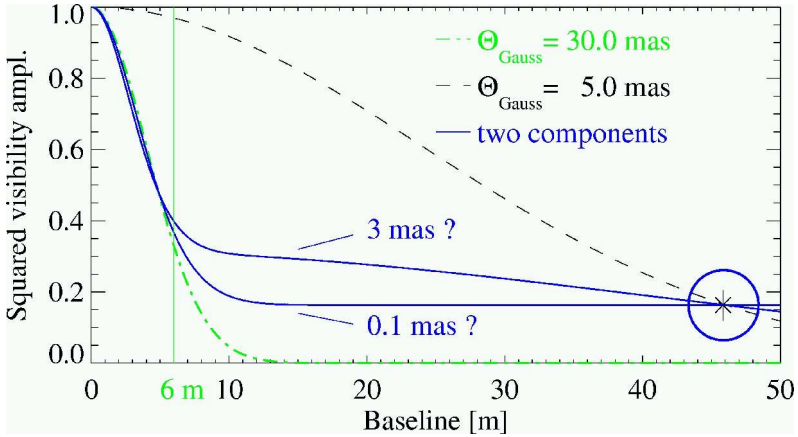
Near-infrared interferometry of the Seyfert galaxy NGC 1068

Markus Wittkowski

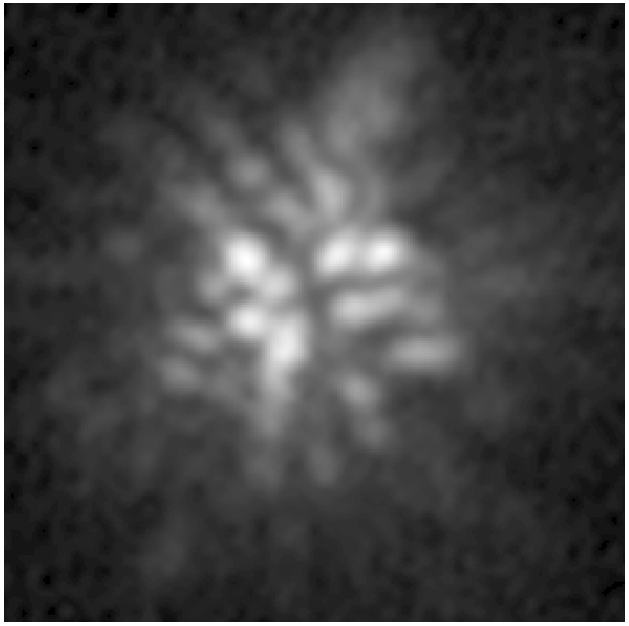




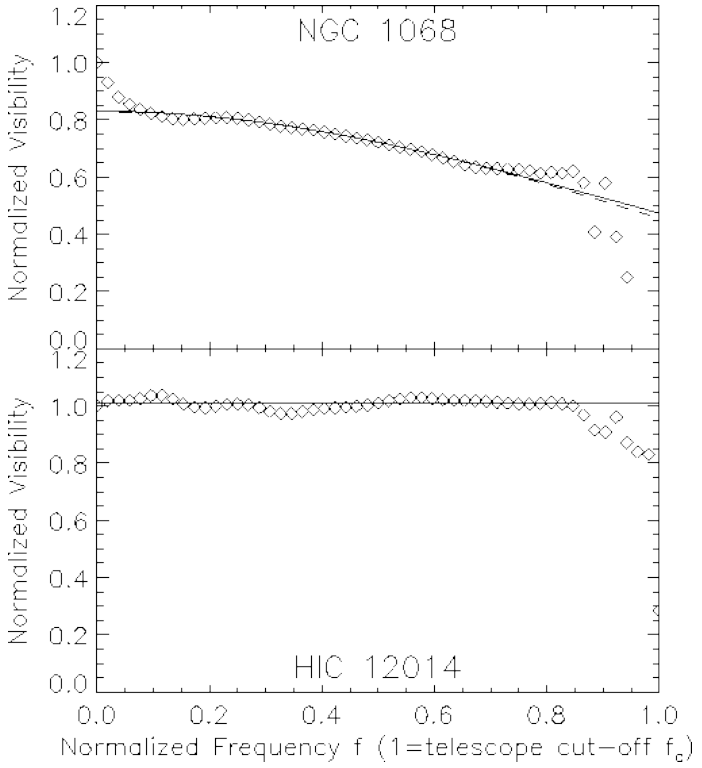


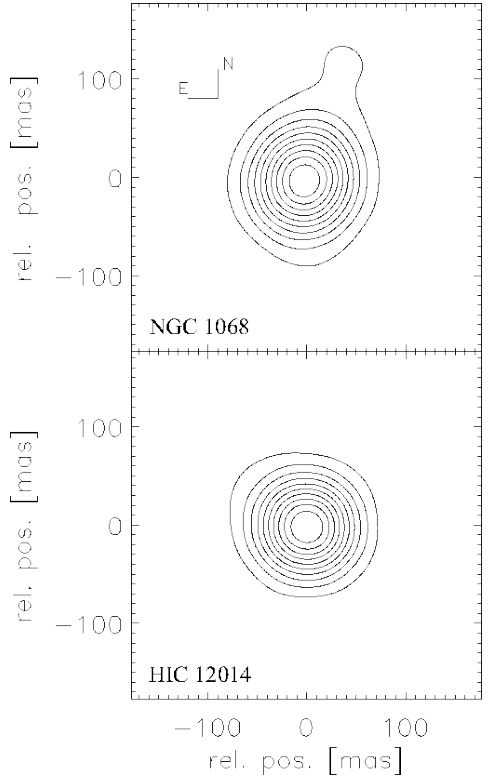
References:
•Wittkowski, Balega, Beckert, Duschl, Hofmann, & Weigelt, 1998, A&A, 329, L45
•Wittkowski, Kervella, Arsenault, Paresce, Beckert, & Weigelt, 2004, A&A, 418, L39
•Weigelt, Wittkowski, Balega, Beckert, Duschl, Hofmann, Men`shchikov, & Schertl, 2004, A&A, 425, 77

K-band speckle interferometry of NGC 1068 with the SAO 6m telescope, Russia



Exposure time 200 ms, Size 1.8x1.8''





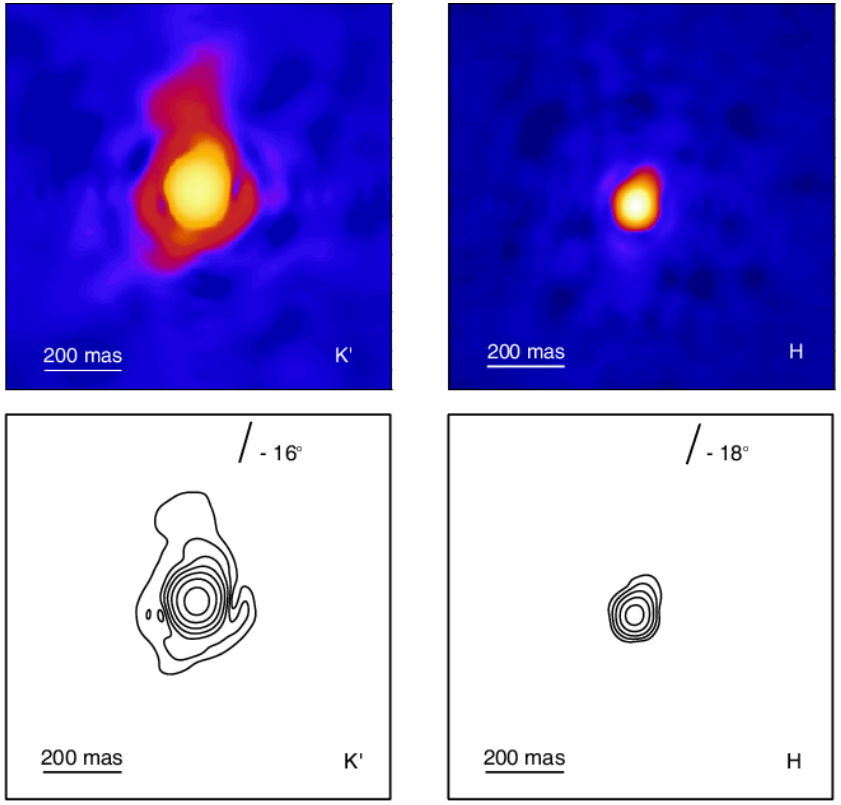
Typical speckle interferogram

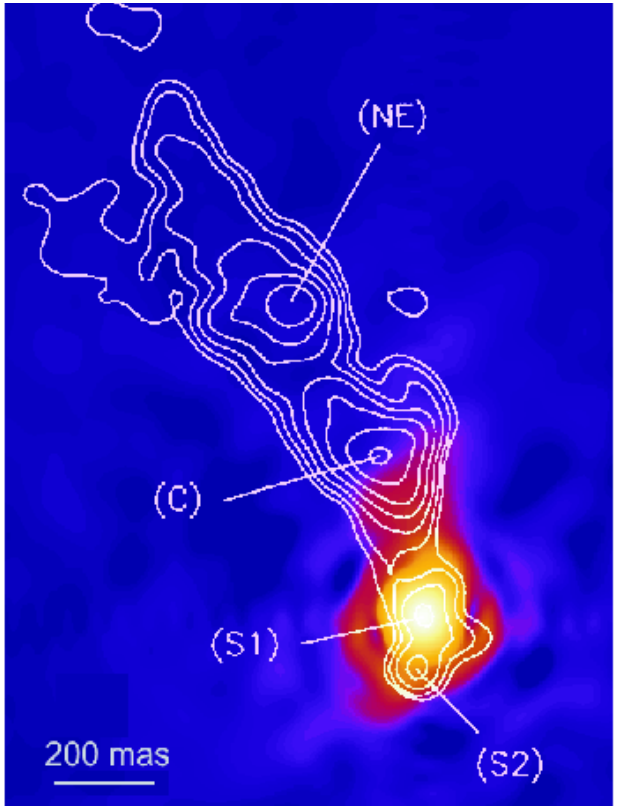
Visibility function,
Gauss fit: FWHM 30 +/- 8 mas ~ 2pc

Reconstructed Image

Wittkowski et al. 1998. Data from October 1996.

K- and H-band interferometry of NGC 1068 with the SAO 6m telescope, Russia



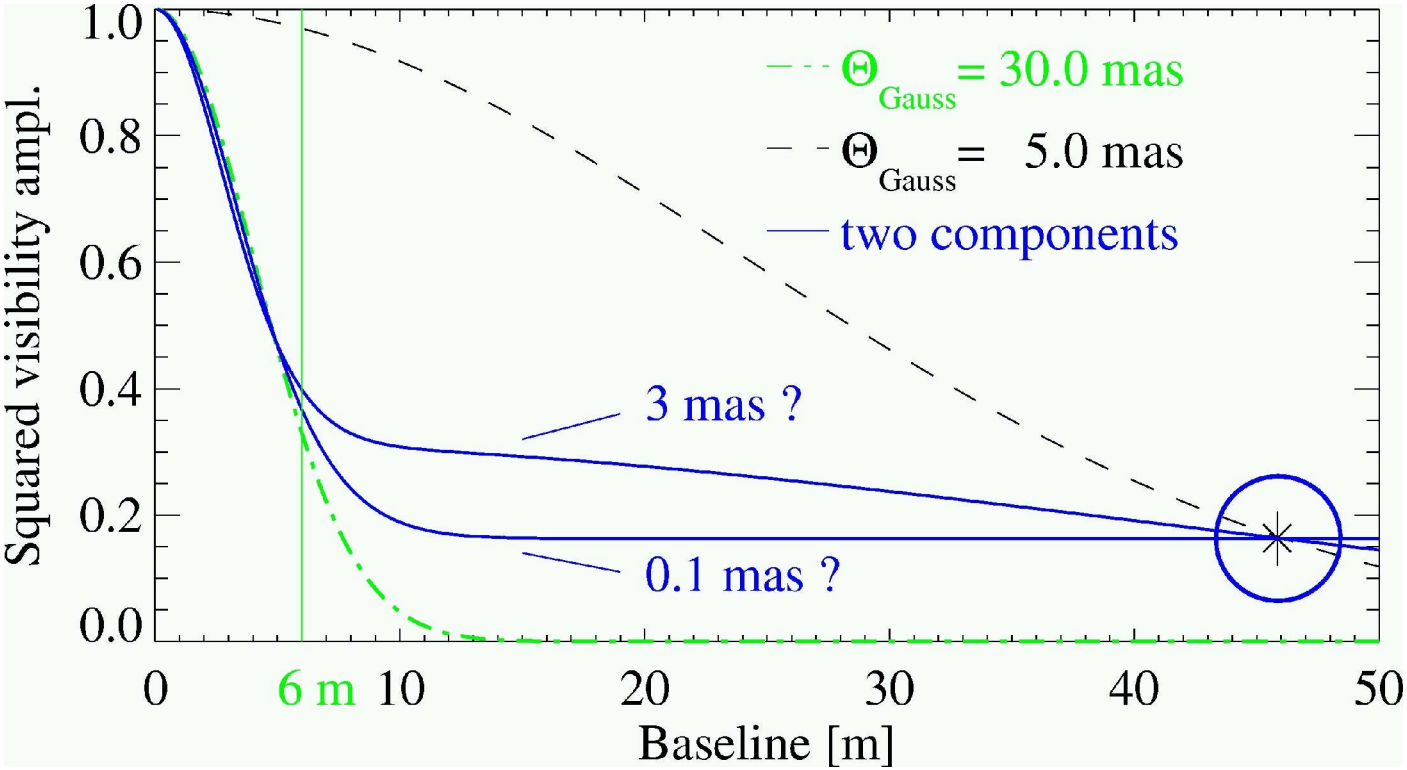


K-band: Gauss fit with FWHM 18 x 39 mas ~ 1.3 x 2.8 pc, PA -16
H-band: Gauss fit with FWHM 18 x 45 mas ~ 1.3 x 3.2 pc, PA -18

Overlay with the 5 GHz MERLIN Map, Gallimore et al. (1996)

Weigelt, Wittkowski, et al. 2004. Data from1996-1999.

VLTI/VINCI interferometry of NGC 1068

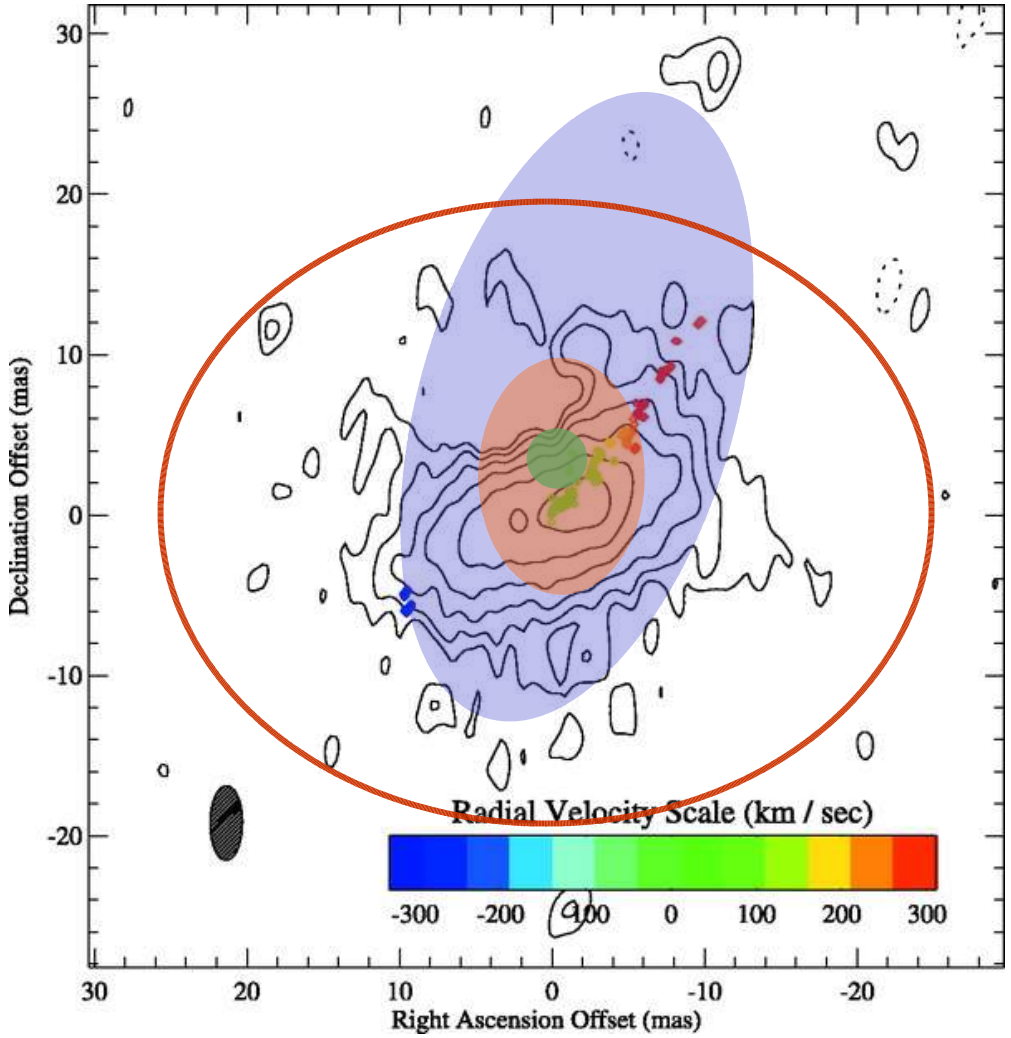


A part of the K-band flux originates from scales < 5 mas ~ < 0.4 pc.

Wittkowski et al. 2004. Data from November 2003.

Comparisons

Radio component S1:



20 x 40 mas (1.5x3 pc) speckle structure.

< 5 mas (< 0.4 pc) VINCI structure.

1.1 x (<0.9) pc hot MIDI component.

3 x 4 pc warm MIDI component.

Relative astrometry is arbitrary !

Gallimore et al. 2004:
VLBA 5 GHz radio continuum.
Water maser spots from
Greenhill & Gwinn 1997.