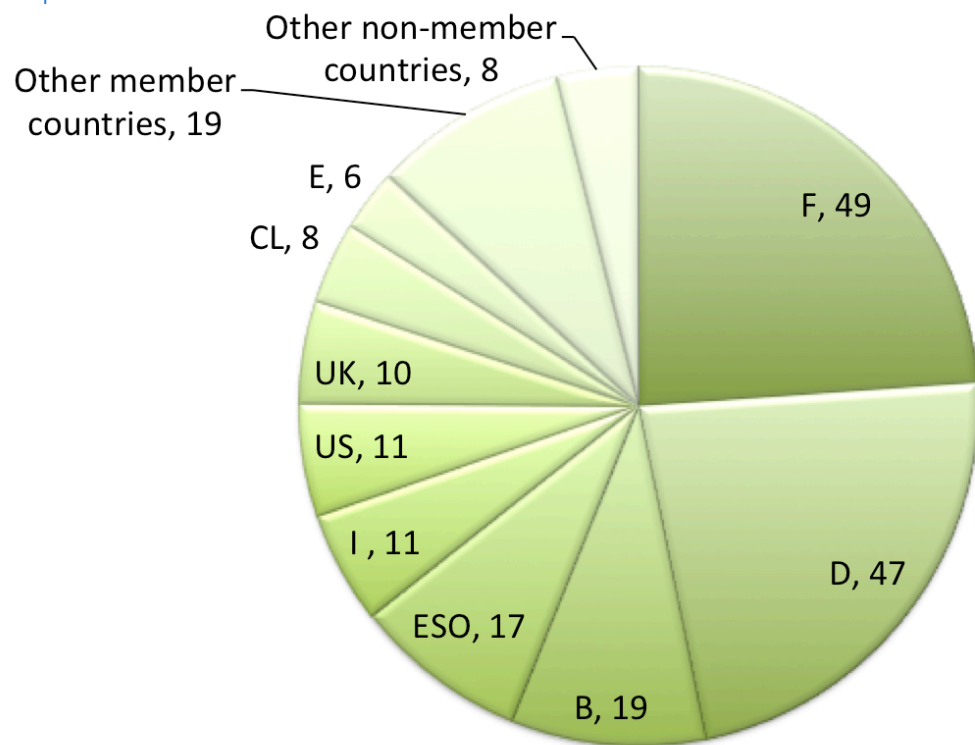




VLTI scientific usage

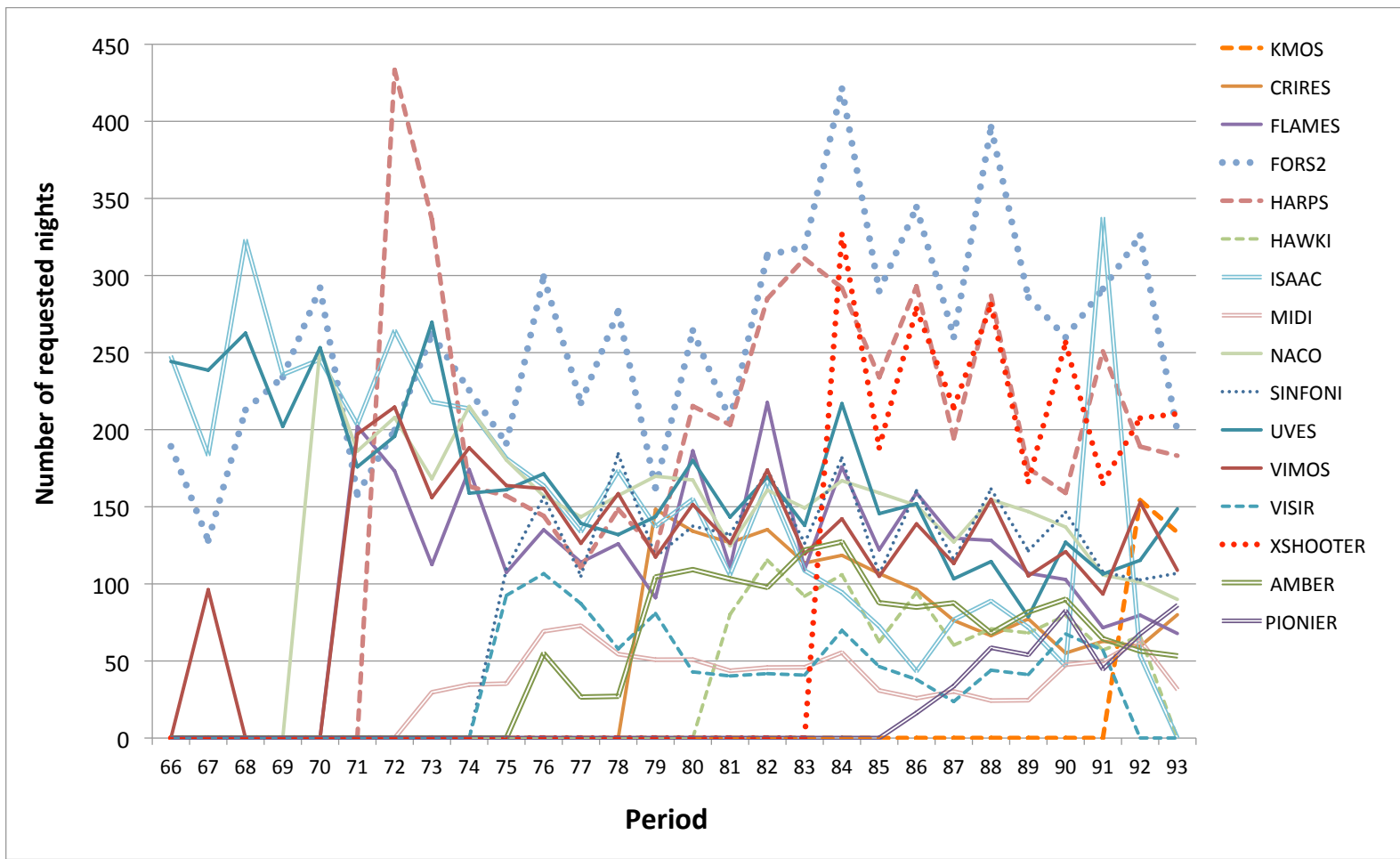


VLTI PIs



- 205 PIs (up to P90);
- 137 PIs with more than 1 program (recurrent users);
- from 22 countries;
- many 1st time users
- many more astronomers indicated an interest (UC poll)

Number of requested nights

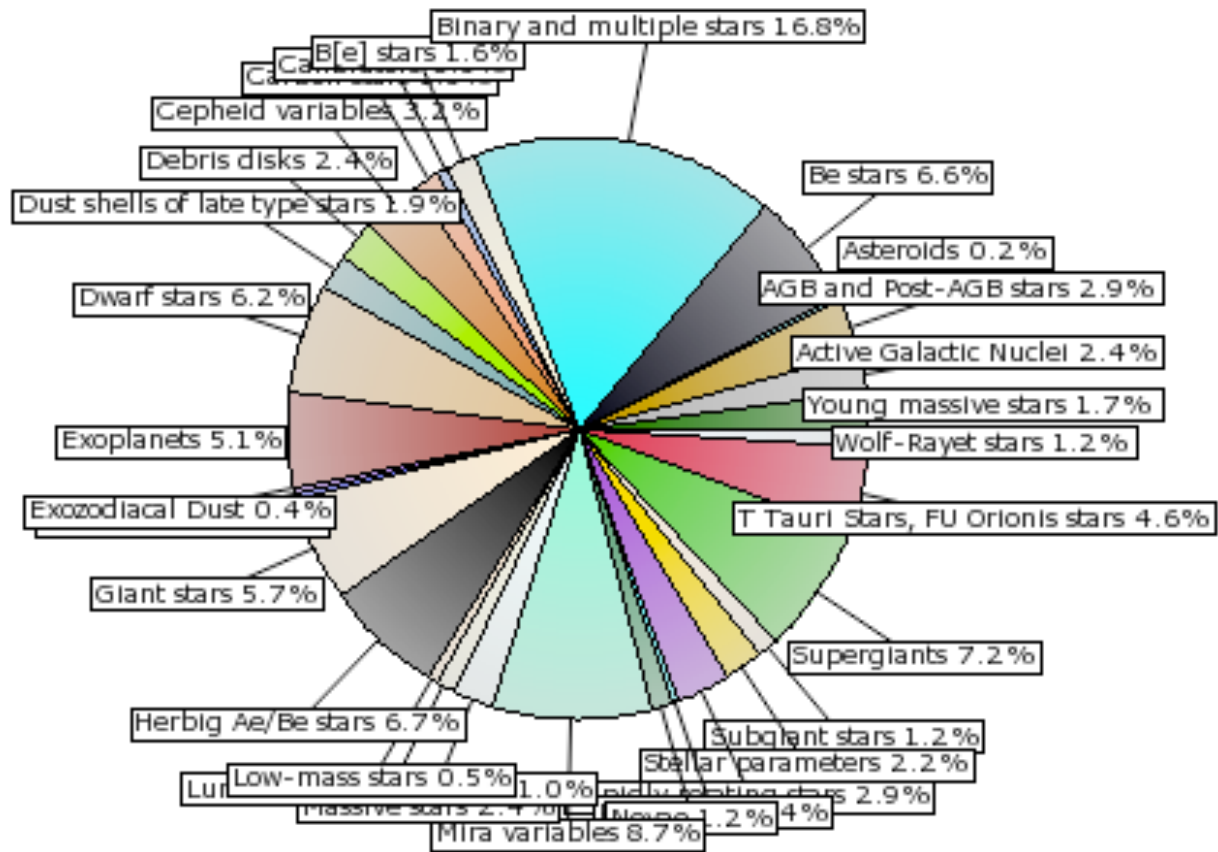


Qualitative assessment on proposals

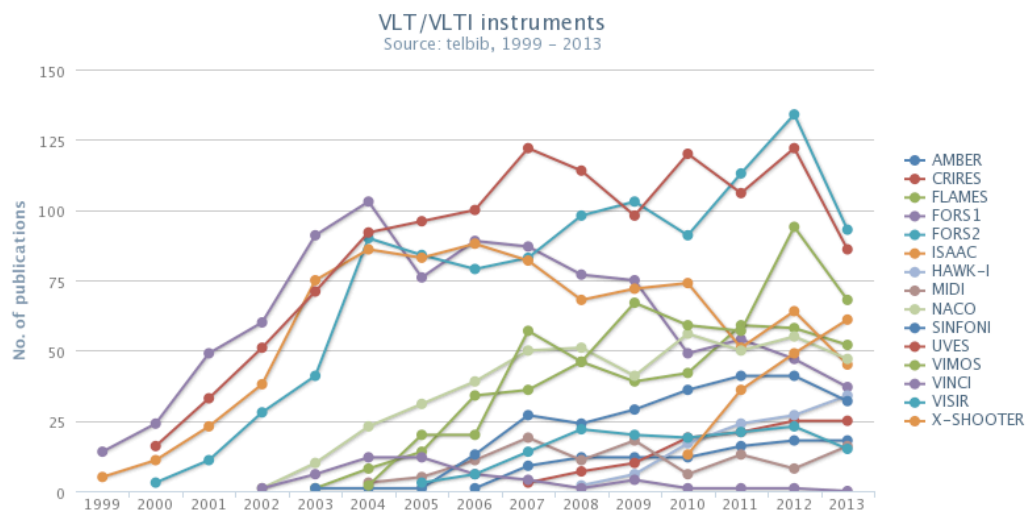
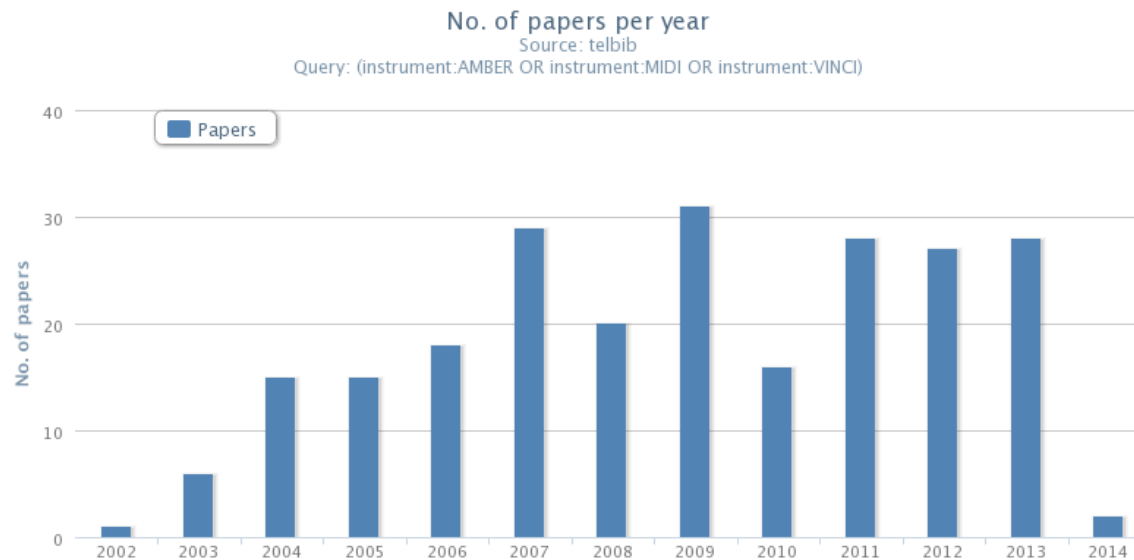
- ◆ Not a lot of Large Programs
- ◆ Not a lot of Filler programs
- ◆ A significant
- ◆ Limited number of AMBER+MIDI proposals
- ◆ Even lower number of VLT+VLTI proposals
- ◆ Nando Patat: VLTI proposals usually have lower ranking on average than VLTs (lack of representativity in OPC)
- ◆ Pressure factor healthy (~4-5) but biased by scheduling problems.

Scientific topics

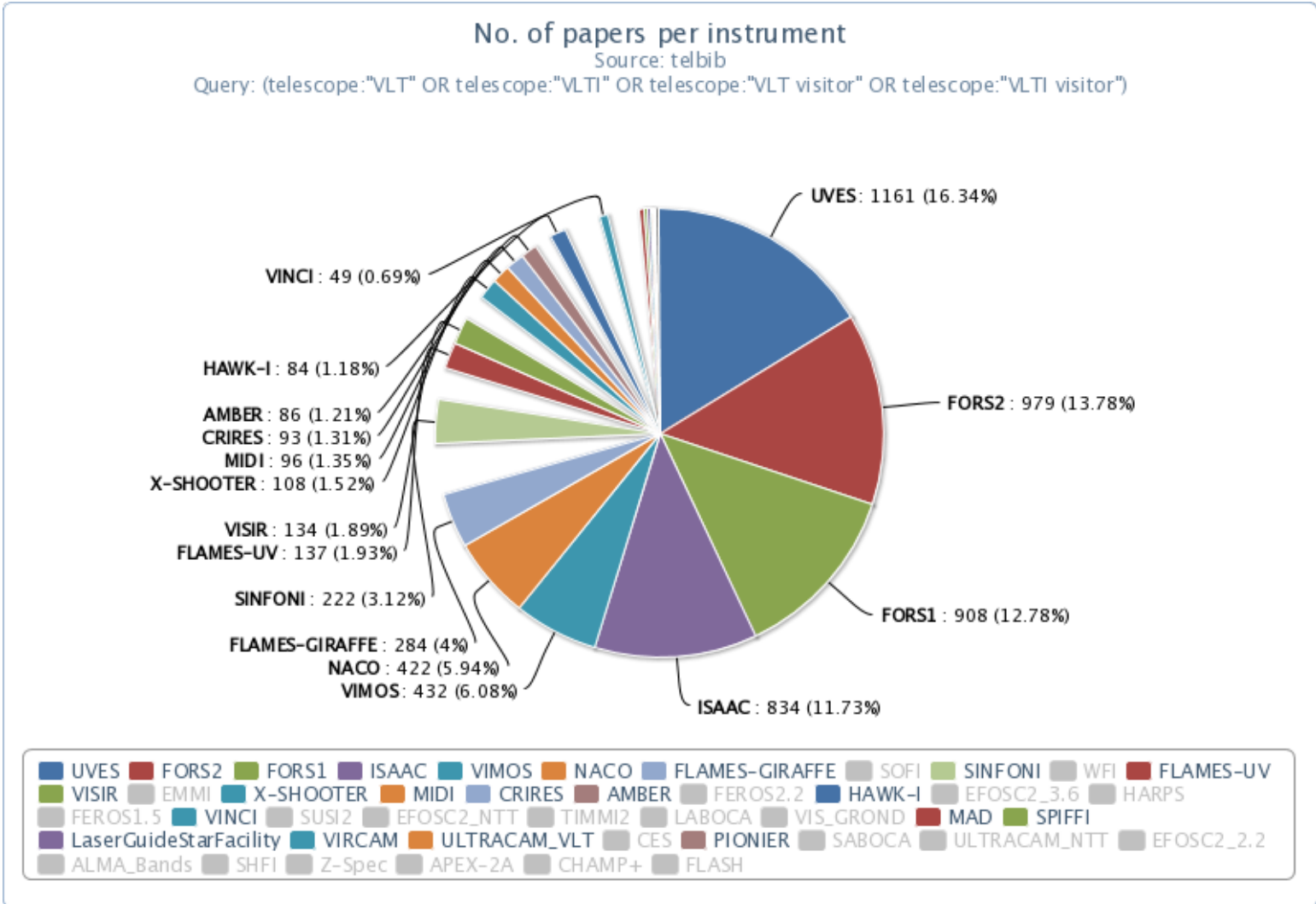
Astrophysical topic



Publications



Publications (II)





An analysis of interferometric high impact papers

- ◆ Papers only published from 2003-2013 were considered
- ◆ This format means recent awesome papers do not show up

Age before Beauty

AGNs:

- Jaffe, W.; Meisenheimer, K.; Röttgering, H. J. A. et al. 2004, Nature, 429, 47 [The central dusty torus in the active nucleus of NGC 1068 \(238 cit.\)](#)
- Tristram, K. R. W.; Meisenheimer, K.; Jaffe, W. et al. 2007, A&A, 474, 837 [Resolving the complex structure of the dust torus in the active nucleus of the Circinus galaxy \(105 cit\)](#)
- Meisenheimer, K.; Tristram, K. R. W.; Jaffe, W. et al. 2007, A&A, 471, 453 [Resolving the innermost parsec of Centaurus A at mid-infrared wavelengths \(50 cit.\)](#)

Protoplanetary disks:

- van Boekel, R.; Min, M.; Leinert, Ch. et al. 2004, Nature, 432, 479 [The building blocks of planets within the 'terrestrial' region of protoplanetary disks \(172 cit.\)](#)
- Leinert, Ch.; van Boekel, R.; Waters, L. B. F. M. et al., 2004, A&A, 423, 537 [Mid-infrared sizes of circumstellar disks around Herbig Ae/Be stars measured with MIDI on the VLTI \(137 cit.\)](#)
- Monnier, J. D.; Millan-Gabet, R.; Billmeier, R. et al. 2005, ApJ, 624, 832 [The Near-Infrared Size-Luminosity Relations for Herbig Ae/Be Disks \(93 cit\)](#)
- Monnier, J. D.; Berger, J.-P.; Millan-Gabet, R. et al. 2006, ApJ, 647, 444 [Few Skewed Disks Found in First Closure-Phase Survey of Herbig Ae/Be Stars \(76 cit.\)](#)
- Malbet, F.; Benisty, M.; de Wit, W.-J. et al. 2007, A&A, 464, 43 [Disk and wind interaction in the young stellar object MWC 297 spatially resolved with AMBER/VLTI \(58 cit.\)](#)

Surface brightness relationship:

- Ségransan, D.; Kervella, P.; Forveille, T.; Queloz, D. 2003, A&A , 397 ,L5, [First radius measurements of very low mass stars with the VLTI \(109 cit\)](#)
- Mozurkewich, D.; Armstrong, J. T.; Hindsley, R. B. et al. 2003, AJ ,126, 2502 [Angular Diameters of Stars from the Mark III Optical Interferometer \(83 cit\)](#)
- Berger, D. H.; Gies, D. R.; McAlister, H. A., 2006, ApJ, 644, 475, [First Results from the CHARA Array. IV. The Interferometric Radii of Low-Mass Stars \(70 cit.\)](#)

Cepheids:

- Kervella, P.; Thévenin, F.; Di Folco, E.; Ségransan, D., 2004, A&A, 426, 297 [The angular sizes of dwarf stars and subgiants. Surface brightness relations calibrated by interferometry \(139 cit.\)](#)
- Fouqué, P.; Arriagada, P.; Storm, J. et al. E. 2007, A&A, 476, 73, [A new calibration of Galactic Cepheid period-luminosity relations from B to K bands, and a comparison to LMC relations \(104 cit\)](#)
- Kervella, P.; Nardetto, N.; Bersier, D. et al. 2004, A&A, 416, 941 [Cepheid distances from infrared long-baseline interferometry. I. VINCI/VLTI observations of seven Galactic Cepheids \(65 cit.\)](#)

Wind/photosphere connection in evolved stars:

- Perrin, G.; Ridgway, S. T.; Coudé du Foresto, V. Perrin, G.; Ridgway, S. T.; Mennesson, B. et al. 2004, A&A, 426, 279 [Unveiling Mira stars behind the molecules. Confirmation of the molecular layer model with narrow band near-infrared interferometry \(77 cit.\)](#)
- Monnier, J. D.; Millan-Gabet, R.; Tuthill, P. G. et al. 2004, ApJ, 605, 436 [High-Resolution Imaging of Dust Shells by Using Keck Aperture Masking and the IOTA Interferometer \(70 cit\)](#)
- Weigelt, G.; Kraus, S.; Driebe, T. et al. 2007, A&A, 464, 87 [Near-infrared interferometry of \$\eta\$ Carinae with spectral resolutions of 1 500 and 12 000 using AMBER/VLTI \(52 cit\)](#)
- Perrin, G.; Ridgway, S. T.; Coudé du Foresto, V. et al. 2004, A&A, 418, 675 [Interferometric observations of the supergiant stars \$\alpha\$ Orionis and \$\alpha\$ Herculis with FLUOR at IOTA \(60 cit.\)](#)

Rapid rotators:

- Domiciano de Souza, A.; Kervella, P.; Jankov, S.; Abe, L.; Vakili, F.; di Folco, E.; Paresce, F., 2003, A&A, 407, L47, [The spinning-top Be star Achernar from VLTI-VINCI \(138 cit\)](#)
- Monnier, J.D.; Zhao, M.; Pedretti, E. et al. 2007, Science, 317, 342 [Imaging the Surface of Altair \(97 cit.\)](#)
- McAlister, H. A.; ten Brummelaar, T. A.; Gies, D. R. et al. 2005, ApJ, 628, 439 [First Results from the CHARA Array. I. An Interferometric and Spectroscopic Study of the Fast Rotator \$\alpha\$ Leonis \(Regulus\) \(81 cit.\)](#)
- Aufdenberg, J. P.; Mérand, A.; Coudé du Foresto et al. 2006, ApJ, 645, 664, [First Results from the CHARA Array. VII. Long-Baseline Interferometric Measurements of Vega Consistent with a Pole-On, Rapidly Rotating Star \(80 cit\)](#)
- Peterson, D. M.; Hummel, C. A.; Pauls, T. A., 2006, Natue, 440, 896, [Vega is a rapidly rotating star \(75 cit\)](#)

Binary orbits

- Boden, A.F.; Sargent, A.I.; Akeson, R.L. et al. 2005, ApJ, 635, 442 [Dynamical Masses for Low-Mass Pre-Main-Sequence Stars: A Preliminary Physical Orbit for HD 98800 B \(55 cit\)](#)
- Kraus, S.; Balega, Y. Y.; Berger, J.-P. et al. 2007, A&A, 466, 649 [Visual/infrared interferometry of Orion Trapezium stars: preliminary dynamical orbit and aperture synthesis imaging of the \$\theta^1\$ Orionis C system \(52 cit\)](#)
- Zhao, M.; Gies, D.; Monnier, J. D. et al. 2008, ApJ, 684, L95 [First Resolved Images of the Eclipsing and Interacting Binary \$\beta\$ Lyrae \(49 cit.\)](#)

Debris disks:

- Absil, O.; di Folco, E.; Mérand, A. et al. 2006, A&A, 452, 237 [Circumstellar material in the Vega inner system revealed by CHARA/FLUOR \(66 cit\)](#)
- di Folco, E.; Absil, O.; Augereau, J.-C. et al. 2007, A&A, 475, 243 [A near-infrared interferometric survey of debris disk stars. I. Probing the hot dust content around \$\epsilon\$ Eridani and \$\tau\$ Ceti with CHARA/FLUOR \(50 cit.\)](#)

Disks around rapidly rotating Be stars:

- Meilland, A.; Stee, P.; Vannier, M. et al. 2007, A&A, 464, 59 [First direct detection of a Keplerian rotating disk around the Be star \$\alpha\$ Arae using AMBER/VLTI \(70 cit.\)](#)
- Gies, D. R.; Bagnuolo, W. G., Jr.; Baines, E. K. et al. 2007, ApJ, 654, 527 [CHARA Array K'-Band Measurements of the Angular Dimensions of Be Star Disks \(50 cit.\)](#)
- Carciofi, A. C.; Okazaki, A. T.; Le Bouquin, J.-B. et al. 2009, A&A, 504, 915 [Cyclic variability of the circumstellar disk of the Be star \$\zeta\$ Tauri. II. Testing the 2D global disk oscillation model \(49 cit.\)](#)

Wind/photosphere connection in evolved stars:

- Perrin, G.; Ridgway, S. T.; Coudé du Foresto, V. Perrin, G.; Ridgway, S. T.; Mennesson, B. et al. 2004, A&A, 426, 279 [Unveiling Mira stars behind the molecules. Confirmation of the molecular layer model with narrow band near-infrared interferometry \(77 cit.\)](#)
- Monnier, J. D.; Millan-Gabet, R.; Tuthill, P. G. et al. 2004, ApJ, 605, 436 [High-Resolution Imaging of Dust Shells by Using Keck Aperture Masking and the IOTA Interferometer \(70 cit\)](#)
- Weigelt, G.; Kraus, S.; Driebe, T. et al. 2007, A&A, 464, 87 [Near-infrared interferometry of \$\eta\$ Carinae with spectral resolutions of 1 500 and 12 000 using AMBER/VLTI \(52 cit\)](#)
- Perrin, G.; Ridgway, S. T.; Coudé du Foresto, V. et al. 2004, A&A, 418, 675 [Interferometric observations of the supergiant stars \$\alpha\$ Orionis and \$\alpha\$ Herculis with FLUOR at IOTA \(60 cit.\)](#)

Disks around evolved binary stars/interacting binaries:

- Kloppenborg, B.; Stencel, R.; Monnier, J.D. et al. 2010, Nature, 464, 870 [Infrared images of the transiting disk in the \$\epsilon\$ Aurigae system \(47 cit.\)](#)
- Deroo, P.; van Winckel, H.; Verhoelst, T. et al. 2007, A&A, 467, 1093 [The circumbinary disc around the J-type C-star IRAS 18006-3213 \(31 cit.\)](#)
- Millour, F.; Chesneau, O.; Borges Fernandes, M. et al. 2009, A&A, 507, 317 [A binary engine fuelling HD 87643's complex circumstellar environment. Determined using AMBER/VLTI imaging \(29 cit.\)](#)

Novae:

- Chesneau, O.; Nardetto, N.; Millour, F. et al. 2007, A&A, 464, 119 [AMBER/VLTI interferometric observations of the recurrent Nova RS Ophiuchii 5.5 days after outburst](#) (33 cit)
- Monnier, J. D.; Barry, R. K.; Traub, W. A. et al. 2006, ApJ, 647, L127 [No Expanding Fireball: Resolving the Recurrent Nova RS Ophiuchi with Infrared Interferometry](#) (26 cit.)

Instrumentation:

- Petrov, R. G.; Malbet, F.; Weigelt, G. et al. 2007, A&A, 464, 1 [AMBER, the near-infrared spectro-interferometric three-telescope VLTI instrument](#) (155 cit.)
- ten Brummelaar, T. A.; McAlister, H. A.; Ridgway, S. T. et al. 2005, ApJ, 628, 453 [First Results from the CHARA Array. II. A Description of the Instrument](#) (139 cit.)
- Tatulli, E.; Millour, F.; Chelli, A. et al. 2007, A&A, 464, 29 [Interferometric data reduction with AMBER/VLTI. Principle, estimators, and illustration](#) (93 cit.)
- Richichi, A.; Percheron, I.; Khristoforova, M. 2005, A&A, 431, 773 [CHARM2: An updated Catalog of High Angular Resolution Measurements](#) (73 cit.)

Conclusion

- ◆ Very few papers over 100 citations (8), one (1) over 200
 - ◆ Context:
 - *For 5 year-old astronomy papers, #1 (#100) most cited paper will have ~1000 (~125) citations.*
 - *For 10 years-old papers, #1 (#100) -> 2000 (200) citations*
- ◆ Survey or “synthesis” papers do better in general
 - ◆ Single object papers rarely show up unless open new band (or spectral resolution) or solve
- ◆ # of Nature/Science papers: 6 or 7
 - ◆ 3 VLT, 1 NPOI, 2-3 CHARA
 - ◆ 2xYSO, 1xAGN, 2xRapid rotator, 3x Imaging
- ◆ Surface brightness relations, AGN and YSO papers seem to be areas having largest integrated effects
- ◆ Decade of Change:
 - ◆ New facilities turned-on: CHARA, VLT
 - ◆ Closures: PTI, IOTA, COAST, G2T, Keck-I, (ISI)