

Future Technologies for Interferometry

(random comments)

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Future Directions for Interferometry
Workshop

Tucson, 13-15 Nov. 2006

Topics

- Mirrors
- Detectors
- Locations
- Fibers

Mirrors

- New technologies could make mirrors lighter and cheaper
- “bubble mirror” or “corrugated glass” from ITT (Kodak)
- Lightweight: 8 kg/m²
- Replicated quickly
- Deformable mirror downstream to remove fixed WF errors

Detectors

- “Zero” read noise with non-destructive, multiple reads
- Si or HgCdTe (>0.7 μm) or bonded to back-end mux
- CMOS (< 1.7 μm) replacing CCD (<1.1 μm)
- CMOS can put detector & readout on a single chip
- Ge:Sb photoconductor array 32×32 ($\lambda < 40\text{-}140$ μm)

Locations

- Moon: not a good idea
- Space: TPF-I/Darwin (6-20 μm) someday
- Dome C: do this before space
- Atacama: lots of infrastructure
- Cost is paramount, science close but second
- General Astrophysics with TPF-C/I/O will fill a niche
- Keck Outriggers (4) at NPOI: a major facility, include in plan
- Rotating array of telescopes seems attractive (no delay lines; also image reconstruction is easy)
- IOTA is now at PTI, with 3-beam closure phase planned
- (parts of IOTA are also at MROI and CHARA)

Fibers

- Reduce dispersion with structured (layered) cladding?
- mid-infrared fibers (silver halide or chalcogenide) may be developed for TPF-I/Darwin
- Use pupil-mapping (2 mirrors or lenses) to shape beam for bulk delay lines, also to feed a fiber