

Any Conclusions?

My personal impressions

*“Improving the performances of current optical interferometers
& future designs”*

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Content

- Two central questions for this workshop
 - Improving the performances of current optical interferometers
 - Future designs -> what comes next



1) Improving the Limits

- A lot of ideas, work on many aspects
 - Beam combination, fringe tracking
 - Subsystems (detectors, metrology, ranging...)
 - Infrastructure (vibrations, AO, ...)
 - Data processing (iLimits, phase calibration)
 - Simplification
 - Nulling
 - Fizeau combination (LBT)
 - Heterodyne
 - ...



2) Future designs

- Seems less active at the moment
 - Hypertelescope, Ohana telescope finished some prototyping
 - Array geometry and optimal multi-beam combination have been long discussed, largely settled?
 - Site research stalled?
- Systematic problems
 - Realistic prototyping quickly becomes a serious research program and is expensive
 - Often no clear funding for new concepts without immediate scientific results, or without a widely accepted goal (like ELTs)
 - Research quickly diverges, stalls in niches, etc.



Golden or dark ages for IF

- Dark side
 - Several promising projects came to an end (Keck, Carlina, Ohana ...)
 - Astrometry with interferometry seems to be a dead end for many applications, satellites pass the arrays
 - Several projects progress significantly slower than expected (VLTI upgrades, MROI multi-aperture, LBT interferometry, etc.)
 - Not only because doing things is more difficult than dreaming them
 - 30m-class takes resources, ALMA is not even finished, ...
 - Funding in general is tighter



Golden or dark ages for IF

- Golden aspects
 - A lot of very good work over the past years, exploiting the existing facilities, leading to
 - Solid increase of scientific results,
 - broadening of the fields (going from binaries, and stellar diameters to stellar physics, disks, AGN, ...)
 - The technical challenges of real arrays are quite well understood now, which makes end-to-end simulations easier / more realistic
 - This Conference presented a vast number of ideas to get factors of ≤ 10 in performance increase
 - There will be new observing parameter space soon by the 2nd gen VLTI, improved imaging sensitivity at CHARA, ...



What comes next

- Next five years seems clear, but currently there is no further generation of instruments or facilities planned
- Big Panels: What is the unique discovery space of interferometry? Do we really need it for Big Science?
- IF is expensive & paper numbers / community is small
 - Bad combination
- However, in physics, there is many multi-100 million \$ projects to serve (apparently, mainly) a single fundamental question (dark matter, dark energy, matter-antimatter asymmetry ...)



What comes next

- There is significant community effort since a couple of years to find this BIG SCIENCE question for optical / infrared interferometry (EII, USIC, workshops, etc.)
- Strong consensus, that we need to go now beyond the open search step, but can only proceed to get a technical roadmap, when being more concrete
- Big Science should meet several goals
 - Clear focus
 - Technically within reach
 - But inseminating for many fields(sounds like writing an observing proposal...)



What comes next: Image planet formation

- The (inner?) community currently settles to this question
 - Unique questions which require mas resolution at IR wavelengths, complementary to ALMA and ELT/JWST
- Goal is NOT to rule out other science options (stellar physics, AGN, etc.) but to define a widely accepted case to help shaping the technical roadmap
- Next step would be to define the top-level requirements to get as many aspects of planet formation as possible
- Science requirements will define
 - How many and how big telescopes, which wavelengths
 - Upgrade of existing facilities, or need for a new
 - Do we have all technology



What comes next: Image planet formation



- We are trying a self-organizing process
 - European (EII) and US (USIC) communities discuss these topics among themselves, but also in between
 - The next 1-2 years is the best (!) time to clarify what IPF means (cf. Astronet roadmap)
- What's your take on this, do you feel being part of this process ... ?
 - Community meetings
 - Get astronomers on board
 - Funding proposals
 - Work internationally
 - IAU umbrella?

