ARAS
Eruptive Stars

Zoom sessions with Steve Shore

Season 2 – 16/01/2026

Credit: Maja Petric

TRAITE
DE LA LVMIERE.

Où sont expliquées

Les causes de ce qui luy arrive

Dans la REFLEXION, & dans la REFRACTION.

Et particulierement

Dans l'etrange REFRACTION

DV CRISTAL D'ISLANDE.

Par C. H. D. Z.

Avec un Discours de la Cause

DE LA PESANTEVR.

A LEIDE,

Chez PIERRE VANDER AA, Marchand Libraire.

MDCXC.

OPTICKS:

OR, A

TREATISE

OF THE

REFLEXIONS, REFRACTIONS, INFLEXIONS and COLOURS

OF

LIGHT.

ALSO

Two TREATISES

OF THE

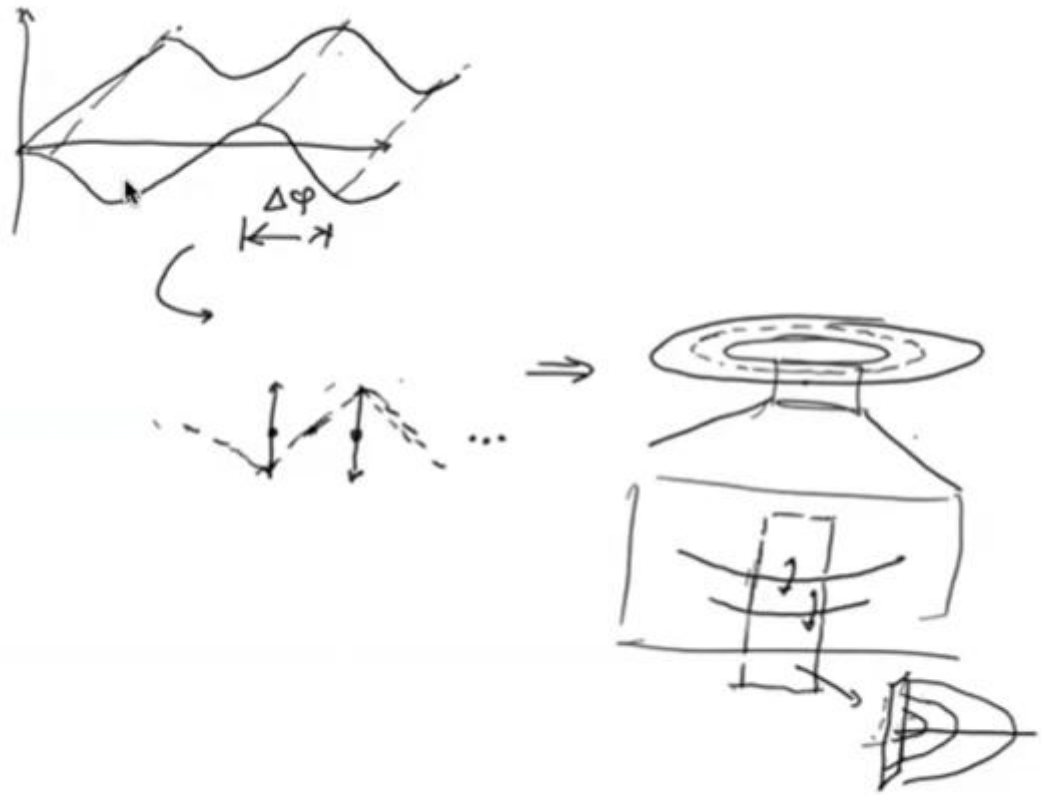
SPECIES and MAGNITUDE

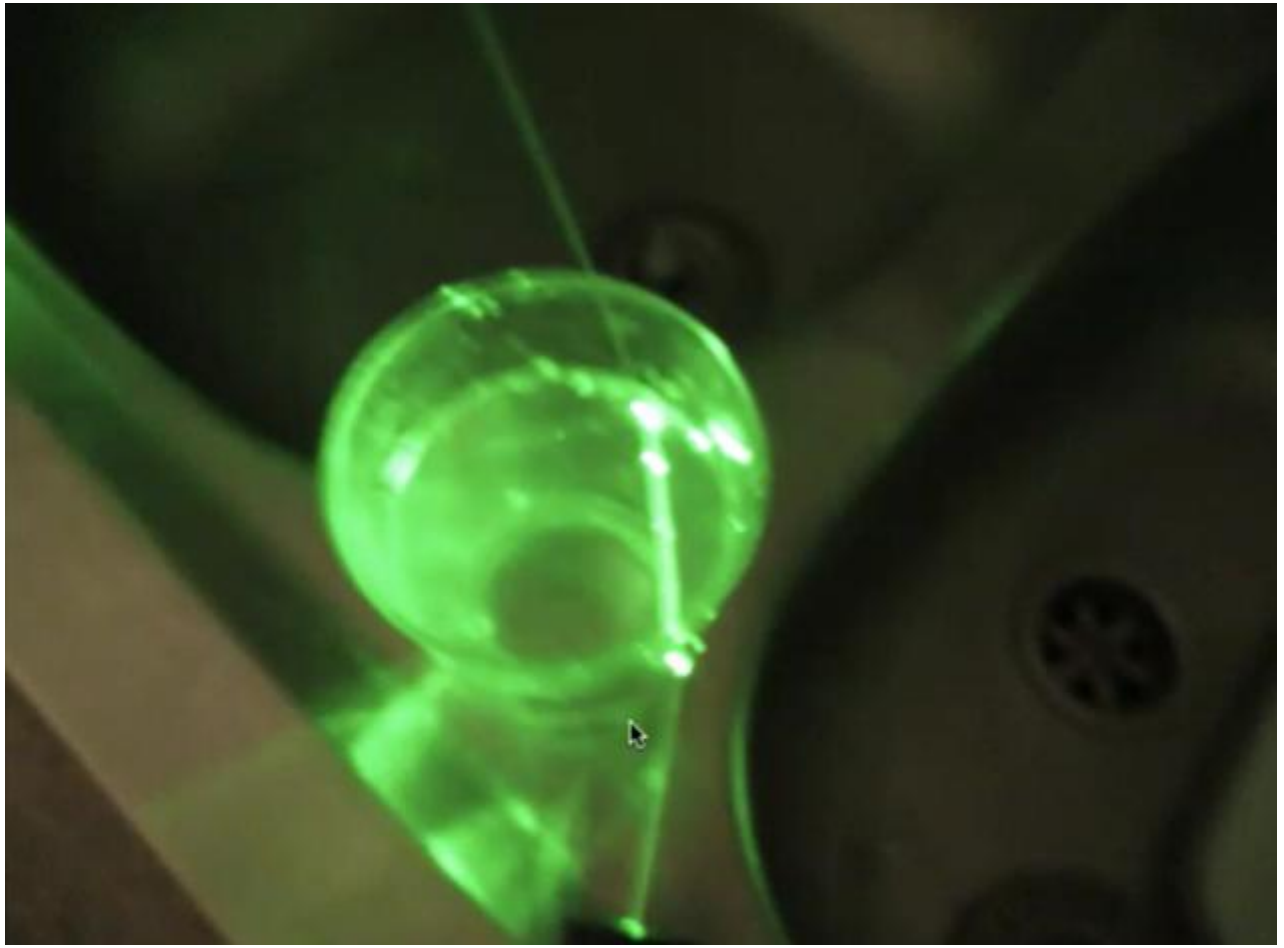
OF

Curvilinear Figures.

LONDON,

Printed for SAM. SMITH, and BENJ. WALFORD, Printers to the Royal Society, at the *Prince's Arms* in St. *Paul's* Church-yard. MDCCIV.


Δφ

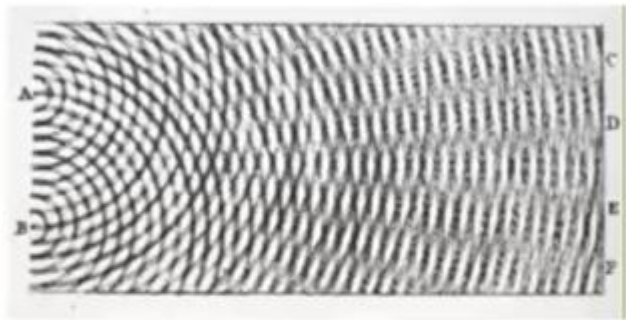


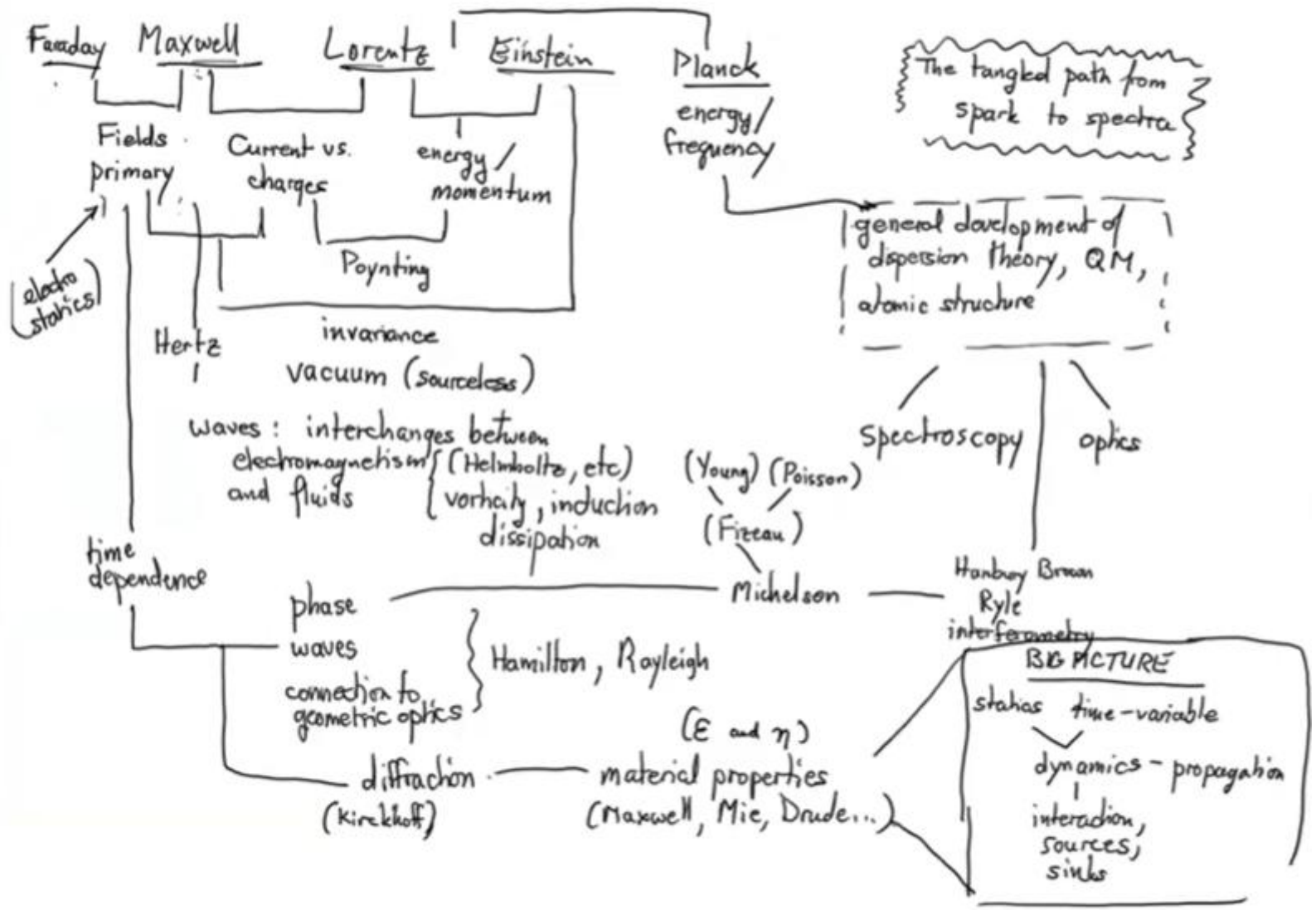
II. *The Bakerian Lecture. On the Theory of Light and Colours.* By Thomas Young, *M. D. F. R. S. Professor of Natural Philosophy in the Royal Institution.*

Read November 12, 1801.

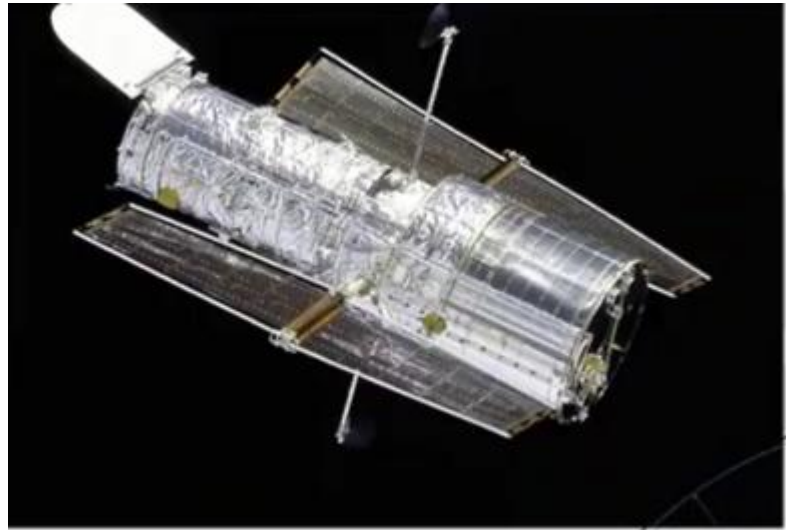
ALTHOUGH the invention of plausible hypotheses, independent of any connection with experimental observations, can be of very little use in the promotion of natural knowledge; yet the discovery of simple and uniform principles, by which a great number of apparently heterogeneous phenomena are reduced to coherent and universal laws, must ever be allowed to be of considerable importance towards the improvement of the human intellect.

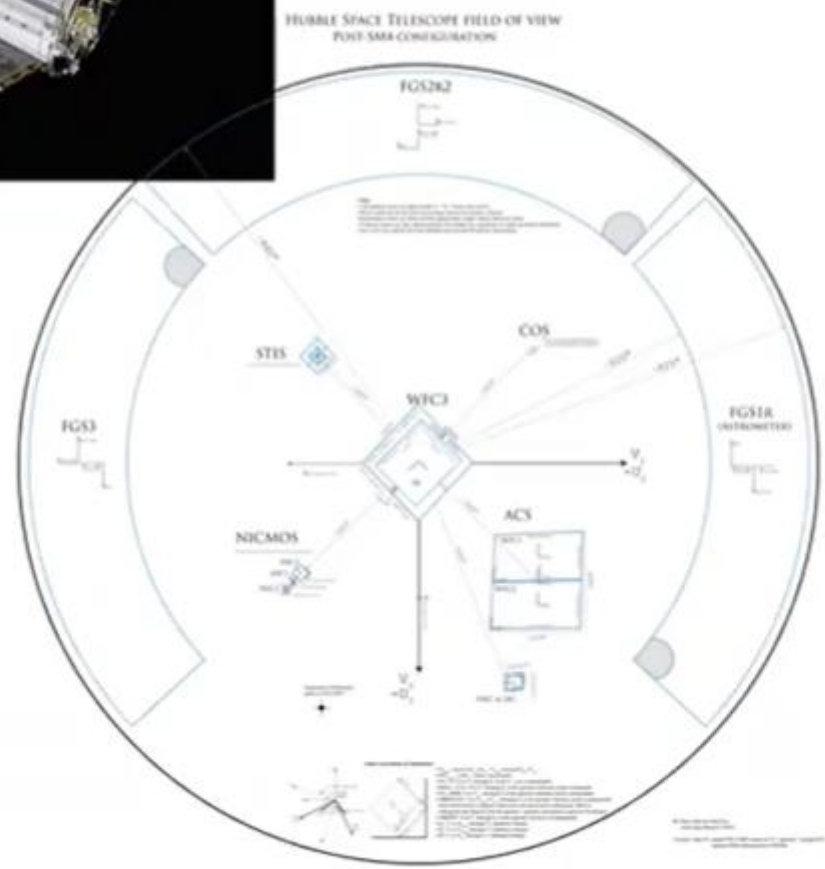
The object of the present dissertation is not so much to propose any opinions which are absolutely new, as to refer some theories, which have been already advanced, to their original inventors, to support them by additional evidence, and to apply them to a great number of diversified facts, which have hitherto been buried in obscurity. Nor is it absolutely necessary in this instance to produce a single new experiment; for of experiments there is already an ample store, which are so much the more unexceptionable, as they must have been conducted without the least partiality for the system by which they will be explained; yet some facts, hitherto unobserved, will be brought forwards, in order to show the perfect agreement of that system with the multifarious phenomena of nature.

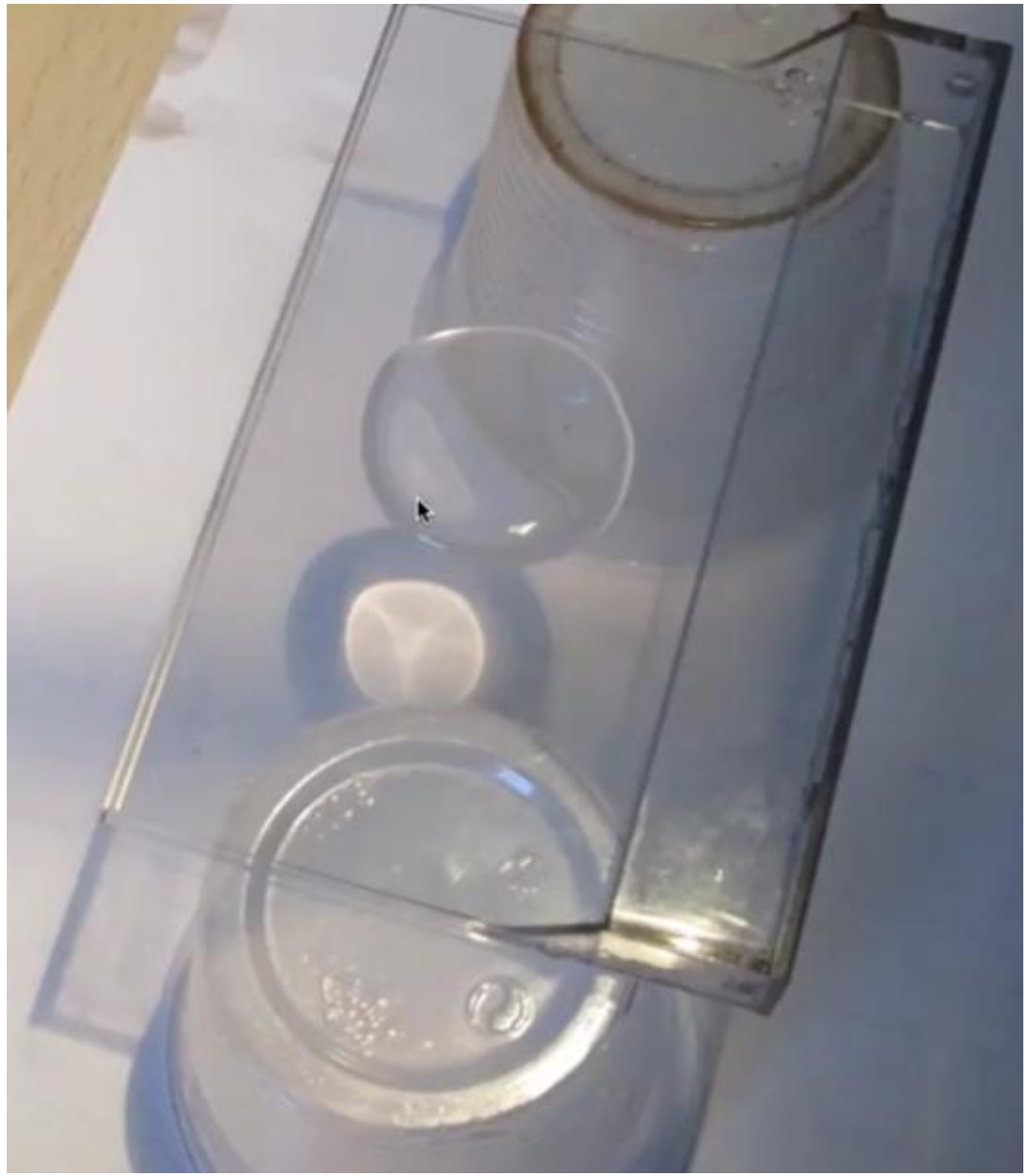



Faraday
Maxwell
Lorentz
Einstein
Planck
energy/frequency
The tangled path from spark to spectra
Fields primary
Current vs. charges
energy/momentum
Poynting
electrostatics
Hertz
invariance
vacuum (sourceless)
general development of dispersion theory, QM, atomic structure
Spectroscopy
optics
waves: interchanges between electromagnetism and fluids
(Helmholtz, etc)
vorticity, induction
dissipation
(Young) (Poisson)
(Fizeau)
time dependence
phase
waves
connection to geometric optics
Hamilton, Rayleigh
Michelson
Hanbury Brown
Ryle
interferometry
BIG PICTURE
statics
time-variable
dynamics - propagation
interaction, sources, sinks
(ε and η)
diffraction
(Kirchhoff)
material properties
(Maxwell, Mie, Drude...)

A though for **Ricky**

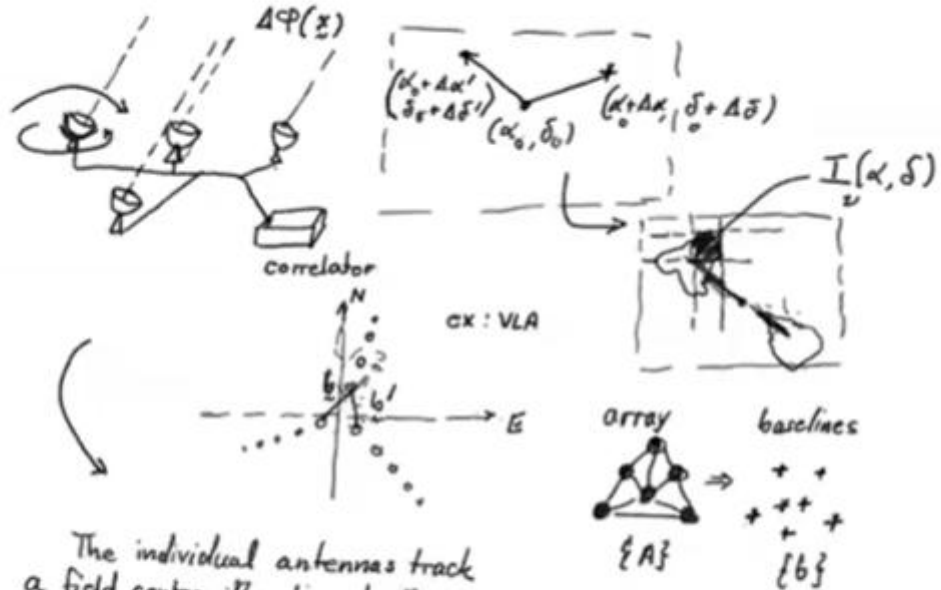



HUBBLE SPACE TELESCOPE FIELD OF VIEW
POST-SM4 CONFIGURATION
FGS2R2
STIS
COS
WFC3
FGS3
FGS1R
(INTERFEROMETER)
ACS
NICMOS

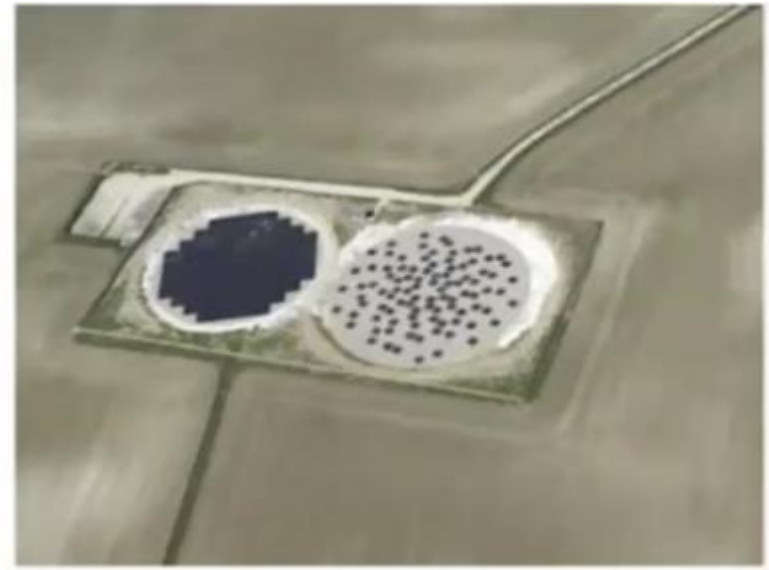


Arecibo: 300 meter

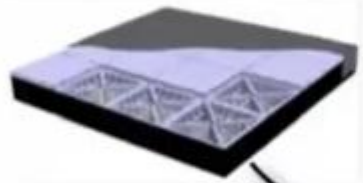
FAST: 500 meter



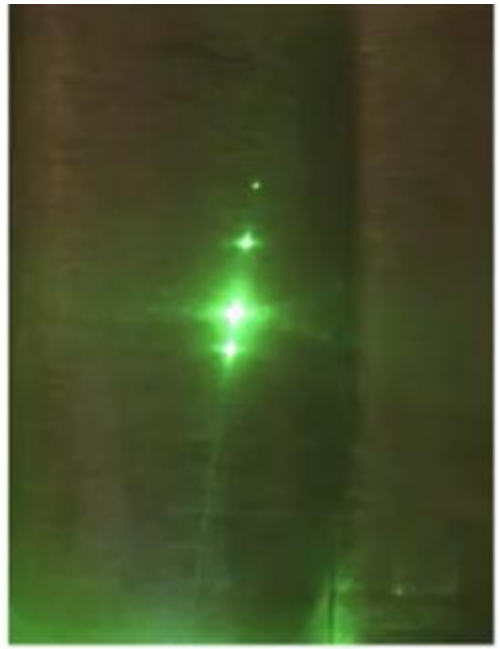
The individual antennas track a field center, the lines to the correlator are adjusted by a control pointing to remove that delay (and flat field the array) so only $(\Delta\alpha, \Delta\delta)$ [small angle limit] remains



High-Band Antenna
(HBA)



Low-Band Antenna
(LBA)



THE ASTROPHYSICAL JOURNAL, 173:L1–L5, 1972 April 1

SPECKLE INTERFEROMETRY: DIFFRACTION-LIMITED MEASUREMENTS OF NINE STARS WITH THE 200-INCH TELESCOPE*

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Department of Earth and Space Sciences, State University of New York at Stony Brook
Received 1972 February 7

ABSTRACT

A new method has enabled us to repeat most of the classical Michelson-Pease measurements of stellar diameters. Stellar images are photographed "coherently" with a special camera. They contain a fine structure from which diffraction-limited information is extracted by optical processing. Nine of the stars observed were resolved, showing angular dimensions as small as 0".016. Limb darkening is evidenced in α Ori, and a faint companion is found for β Cep.

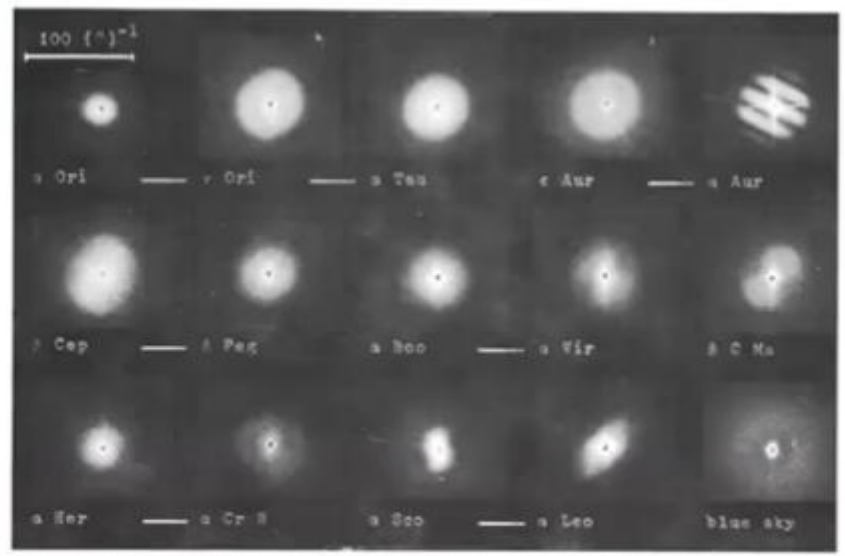
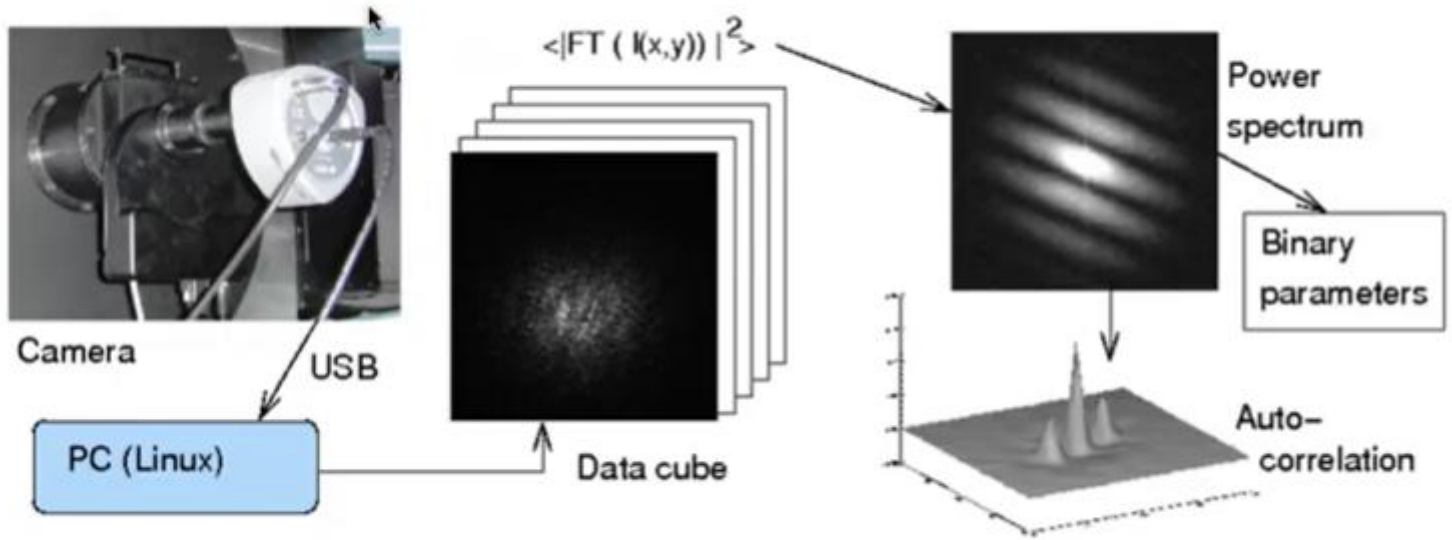
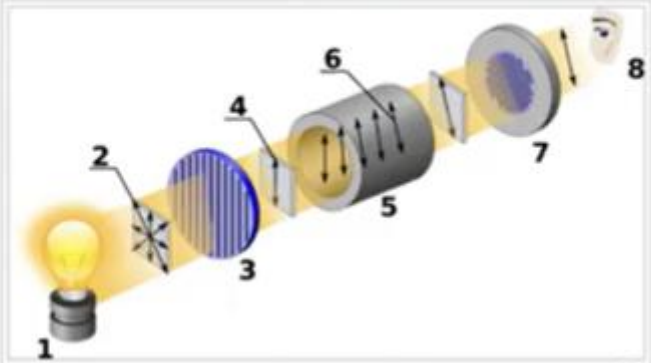


PLATE L2

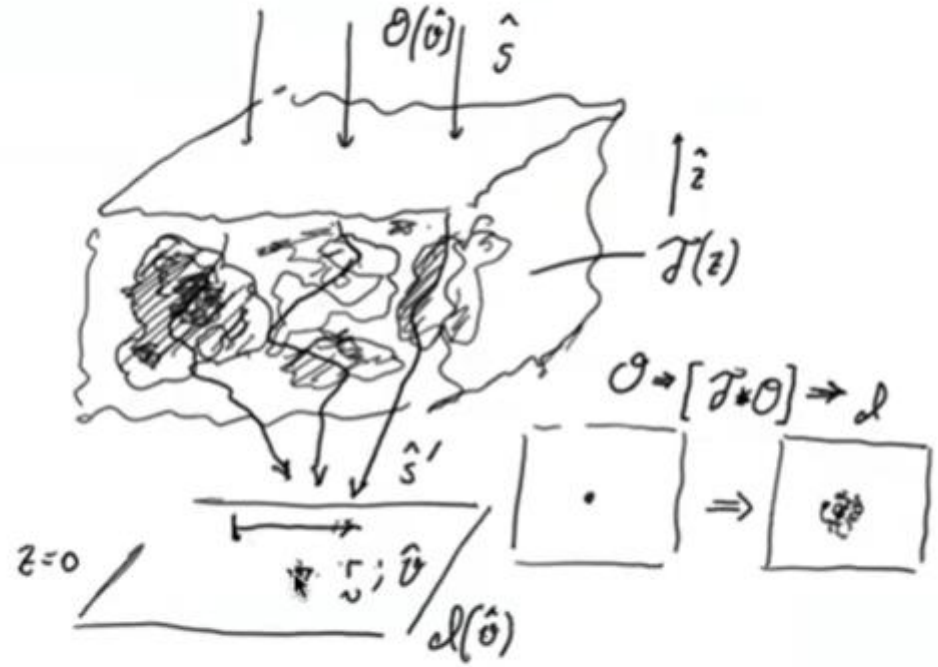
FIG. 2.—Composite Fourier transforms, showing resolution of six stellar disks and two binaries. Object-reference pairs are indicated by a bar. The alteration in the case of β CMa is believed to result from telescope aberrations. The "blue sky" transform shows the effect of pure photon-noise granularity.


Camera
USB
PC (Linux)
<|FT (I(x,y)) |2>
Data cube
Power
spectrum
Binary
parameters
Auto–
correlation



Operating principle of a polarimeter for measuring optical rotation.

1. Light source
2. Unpolarized light
3. Linear polarizer
4. Linearly polarized light
5. Sample tube containing molecules under study
6. Optical rotation (dextrorotatory, ~30°) due to chiral molecules
7. Rotatable linear analyzer
8. Detector


$\Theta(\hat{\theta})$
$\hat{s}$
$\hat{z}$
$\mathcal{T}(z)$
$\Theta \to [\mathcal{T}_* \Theta] \to \mathcal{L}$
$\hat{s}'$
$z=0$
$\xi; \hat{\theta}$
$\mathcal{L}(\hat{\theta})$