

Technical Optics

Femi Ojambati

Pepijn Pinkse

Applied NanoPhotonics

Light: central source of information

Human communication

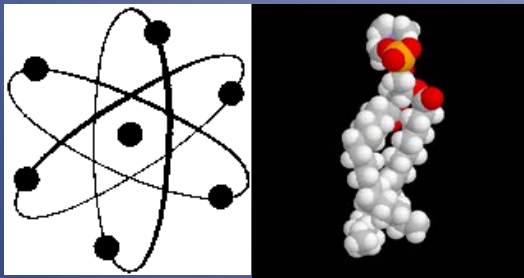


Optical retrieval of ancient data



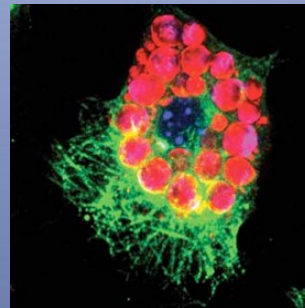
Optical Instruments: gain knowledge about the “invisible”

Atoms & Molecules



Spectrometer

Living Cells

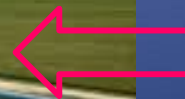


Microscope

Universe



Telescope



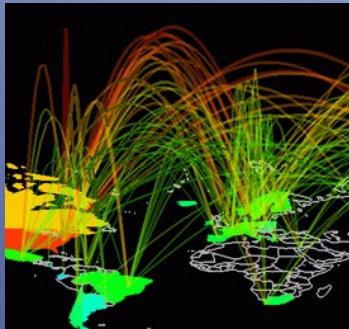
What is this ?

Relevance of Technical Optics

Health



Communications



Economy



Environment



Social



Technical Optics

- I **Lectures** on the themes:
Fourier transformations for EM waves
e.g. holography,
mode-locked lasers,
advanced microscopy,
no-go theorems
- II **TO road trip** to academic / industrial research places
- III **Student lectures** with coaching and feedback

PAST ROADTRIPS



2023



Welcome to
ASML
STUDENT VISIT
UNIVERSITY
TWENTE
➔

Technical Optics

- I **Lectures** on the themes:
Fourier transformations for EM waves
e.g. holography, mode-locked lasers, images, no-go theorems
- II **TO road trip** to academic / industrial research places
- III **Student lectures** with coaching and feedback

Lecturers: Femi Ojamba



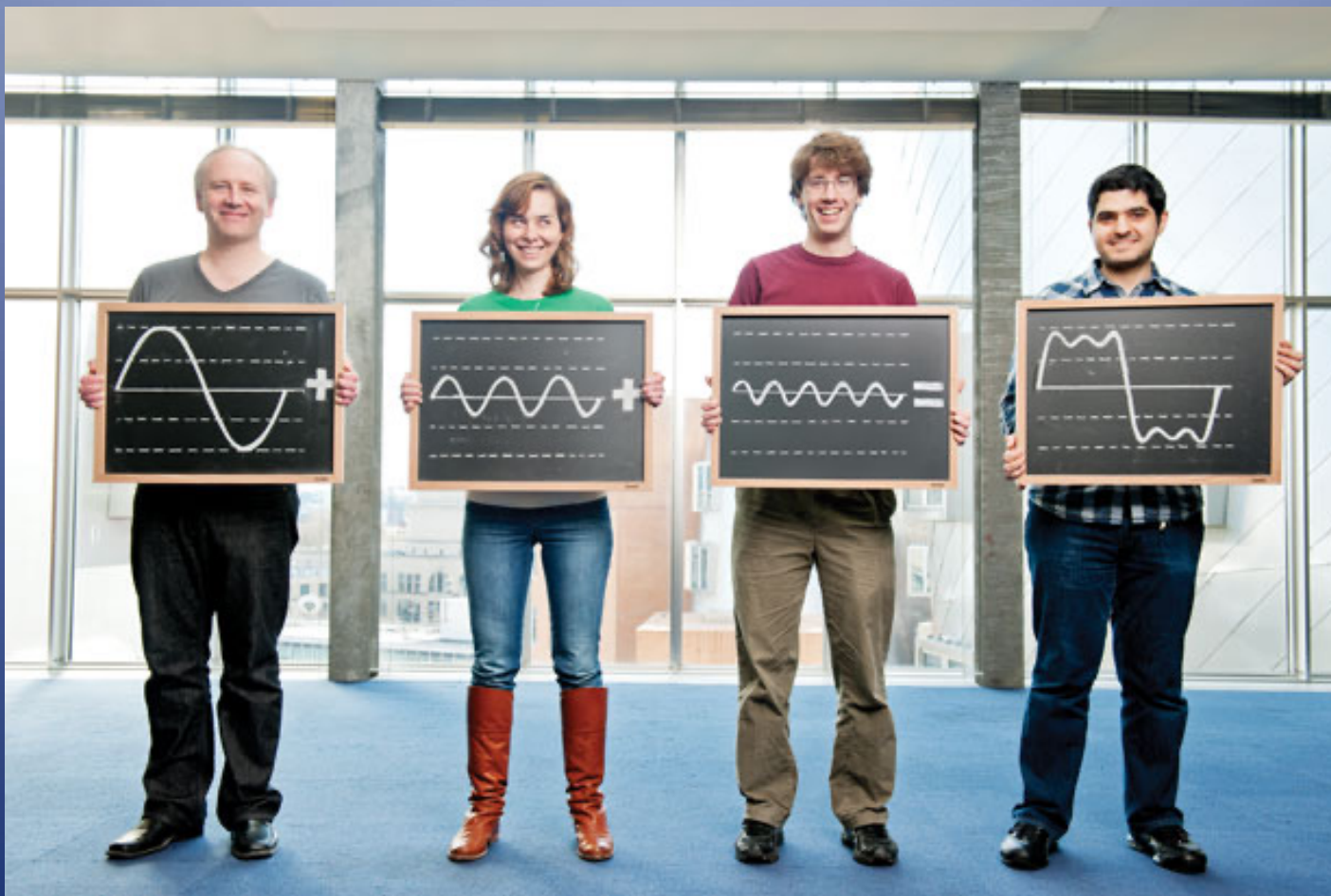
Pepijn Pinkse



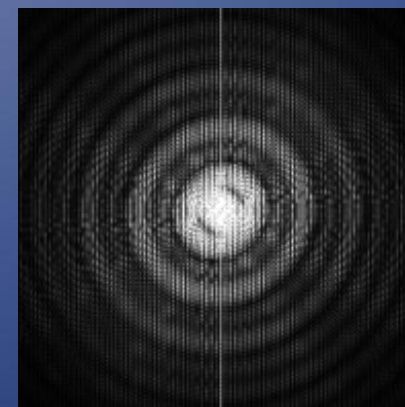
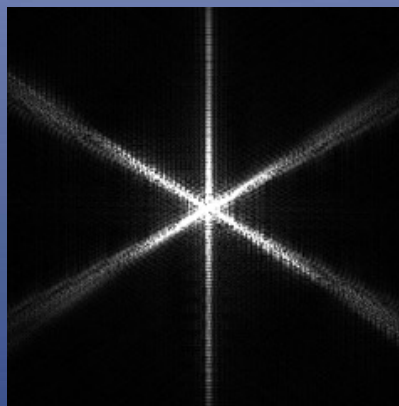
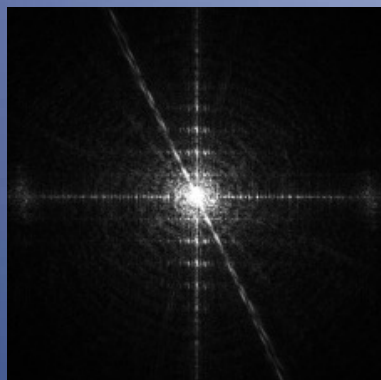
Book: Optics, 5th ed. by Eugene Hecht

Grades: 60% written exam (covering topics from part I)
20% homework
20% presentation including annotations

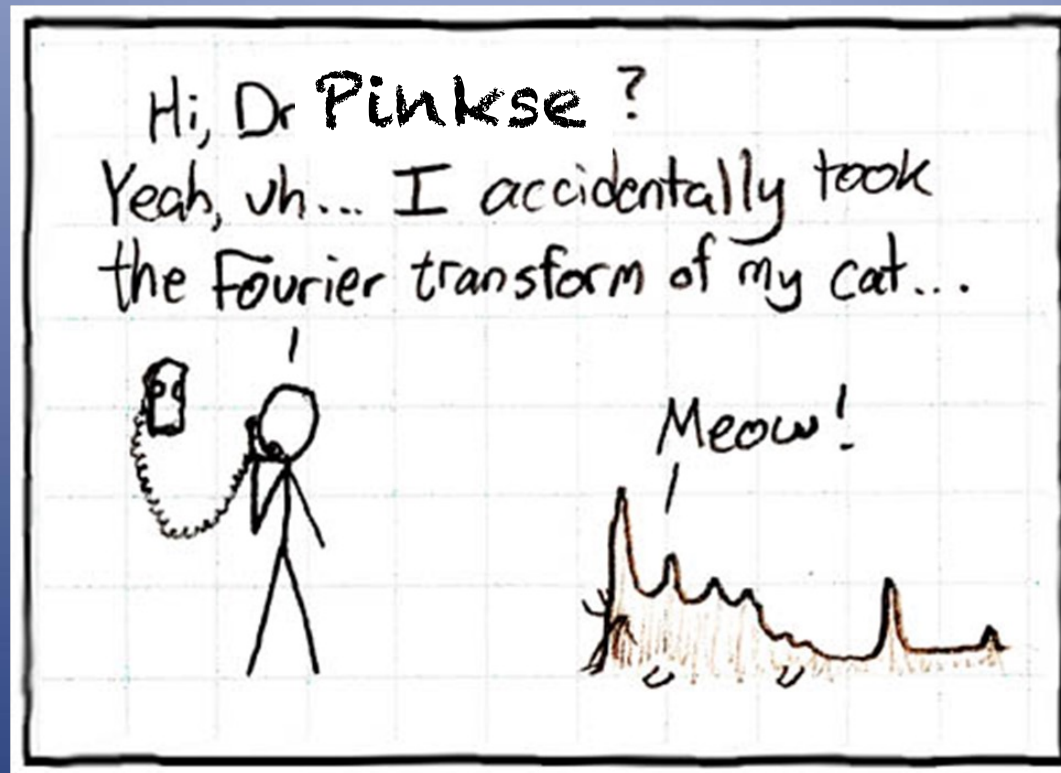
The bridging item:
Fourier transforms — *live*



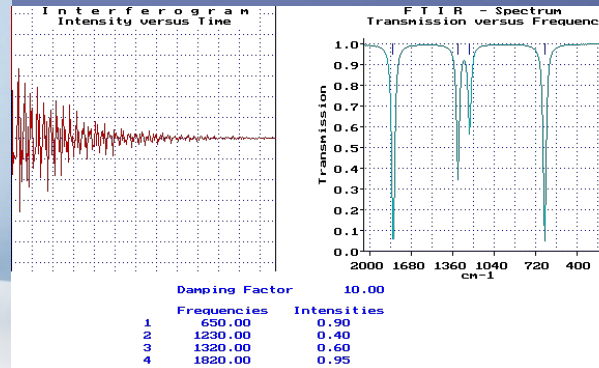
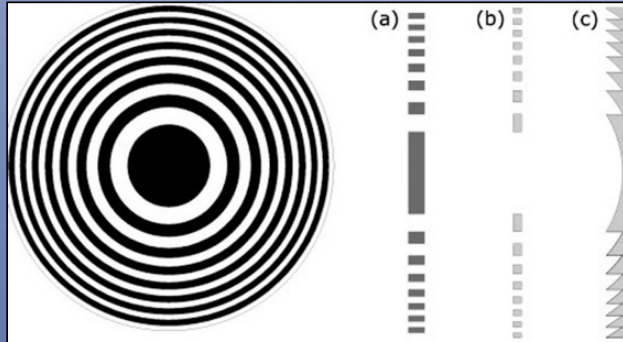
The bridging item:
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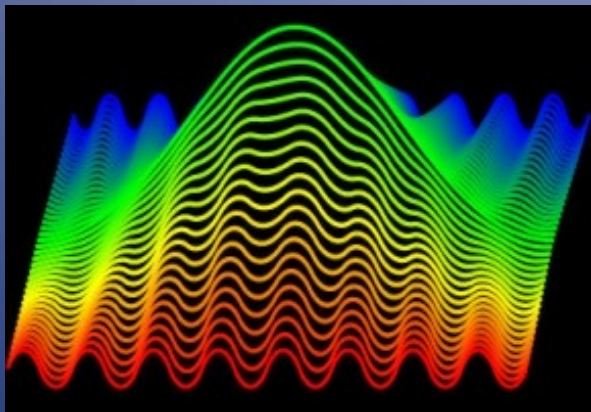
The bridging item:
Fourier transforms — *live*



Applications of FT in optics

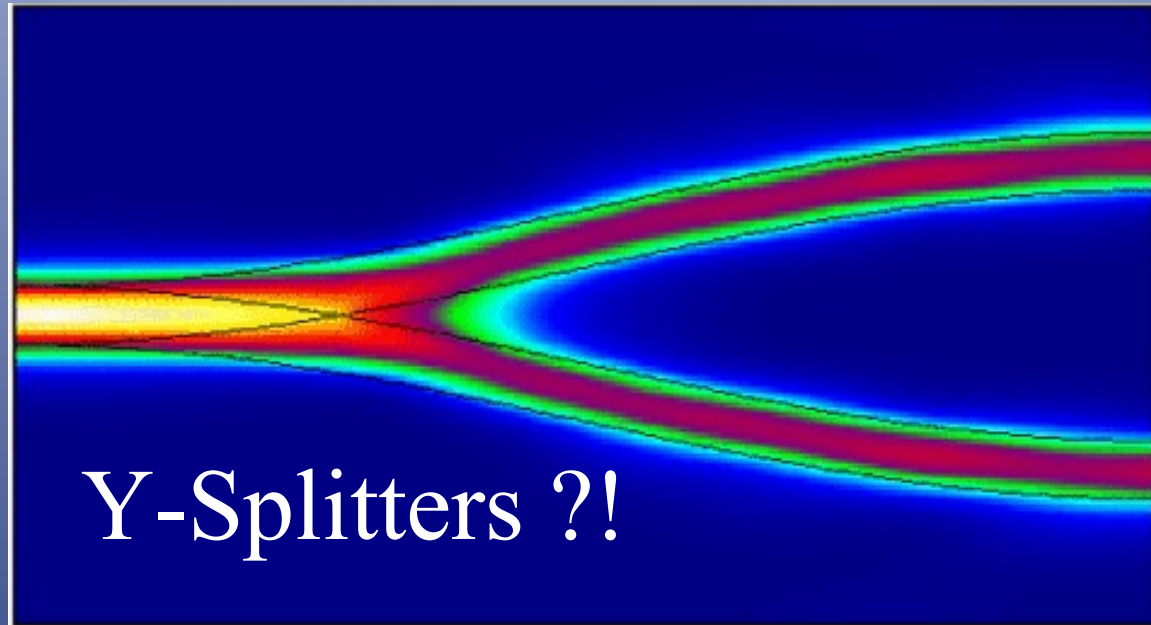


Can this
be true ?



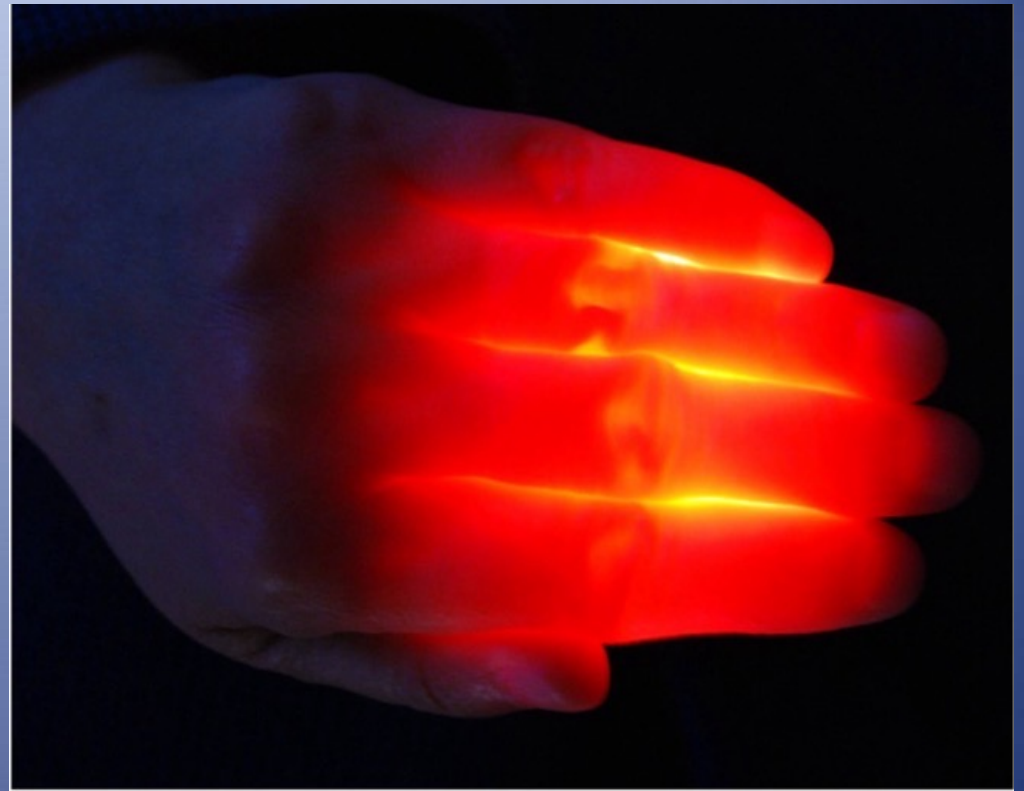
Shape light in time

No-go Theorems



Time-reversal, Etendue, Phase-Space arguments

Shape wavefronts
through “stuff” !



To be achieved

1. Understand more of the beauty of light



2. Follow up great Dutch scientists



3. Prepare for your next adventures and jobs

Beyond Technical Optics:

- Internship
- MSc project
- PhD ?

Applied Nanophotonics		
General Applied Nanopotonics		
<i>Specialisation course</i>		
202200044	Fundamentals of Photonics	5
Biomedical Optics		
<i>Specialisation courses</i>		
202200295	Laser Physics and Nonlinear Optics	5
202000663	Molecular Structure and Spectroscopy (part of AT module 9)	2.5
193500000	Biomedical Optics	5
Integrated Optics		
<i>Specialisation courses</i>		
202200295	Laser Physics and Nonlinear Optics	5
191210880	Integrated Optics	5
202200045	Integrated Photonic Systems and Experiments	5
Light and Matter Interaction		
<i>Specialisation courses</i>		
202200046	Light and Matter	5
202200047	NanoPlasmonics	5
202200048	Quantum and Classical Emitters	5
Quantum Optics		
<i>Specialisation courses</i>		
202100083	Quantum Optics	5
191210880	Integrated Optics	5
202100078	Quantum Information	5
<i>Recommended elective courses ANP cluster</i>		
-	All courses from the other specialisations within the ANP cluster	
201700034	Introduction to Partial Differential Equations	5
201500405	Complex Function Theory	3
202200103	Image Processing and Computer Vision	5

Applied NanoPhotonics

Nijverdal June 20

Ootmarsum 2022

Groenlo 2023

018

Hengelo 2021

Ootmarsum 2011

2017

Bad Bentheim 2010

Hoenderloo 2011

Ootmarsum 2016

Coevorden 201

Begin with serious fun in optics & photonics

Examples of recent ANP collaborative highlights

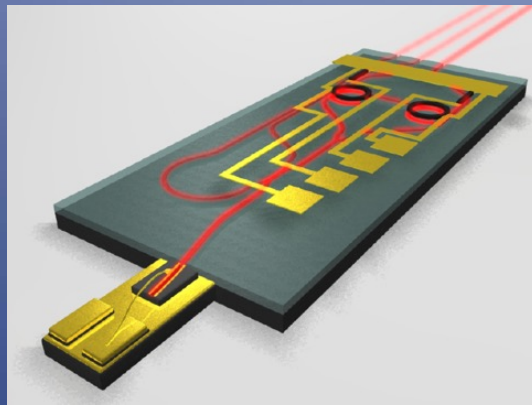


see-through



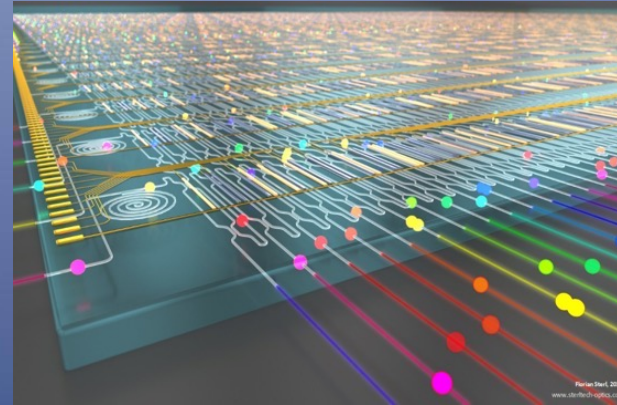
COPS & NBP

Lowest linewidth



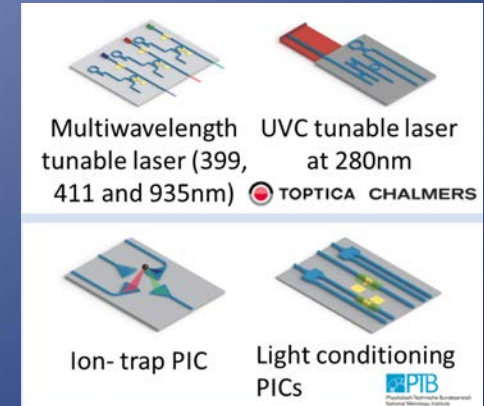
LPNO & OS

Quantum photonic processor



LPNO & AQO

Quantum PICs



iOS & AQO

Hope to see you soon!

