PMRF-ISSS Teaching Programme

Prime Minister Research Fellowship students' teaching requirement facilitated by the Institute of Smart Structures and Systems

Module PMRF-ISSS180/II/2024

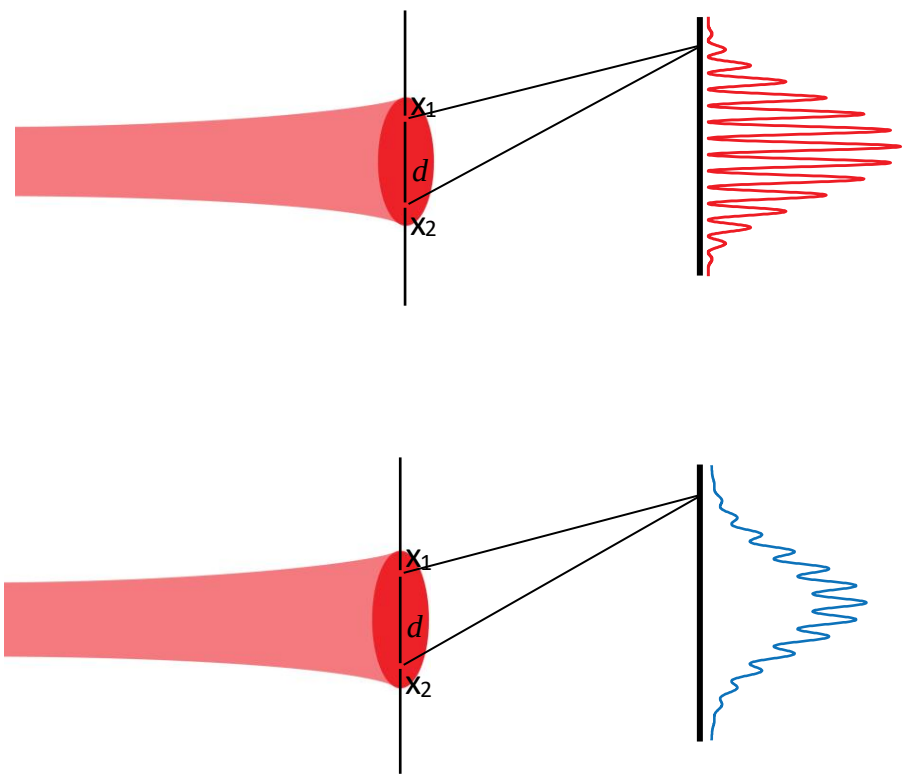
Optical Coherence

Name of the PMRF student

PRANAY MOHTA

Required background of the students taught

Anyone with basic undergraduate physics and mathematical physics skills.
Relevant for Physics and Photonics students



Details of the content of the module

This series of lectures is designed to cover the basics concepts of optical coherence theory. The problem-solving sessions are included for better understanding.

List of topics to be covered:

1) Coherence: Spectral properties of stationary random processes, Wiener-Khintchine theorem, Angular spectrum representation of wavefields, Introduction to the second-order coherence theory, Propagation of coherence, The van Cittert-Zernike theorem, Coherent mode representation of sources and fields.

(2) Basics of nonlinear optics, Two-photon field produced by parametric down-conversion, Quantum theory of higher-order correlations, Two-photon coherence and two-photon interference effects.

Relevant state-of-the-art research works will also be discussed.

Schedule of the module

Start Date: 07/01/25

End Date: 25/03/25 (tentative) [12 weeks]

Lecture timing: Tuesday (11:00—13:00)

Saturday (15:00—17:30)

Note: The course may get extended by one week. In unforeseen cases, the recorded lectures will be uploaded on time.

Meeting link : Will be shared later

Link

Contact email ID: isss.forum@gmail.com

Registration link:
https://forms.gle/7McovxVDwsrxQAgE7