



Winter College on Optics: Theoretical and Applied Aspects of Metamaterials and Metasurfaces

Description:

Metamaterials are artificially engineered structures with sub-wavelength spatial dimensions in general. The fundamental building block of a certain metamaterial is known as meta-atom whose specific arrangement in a periodic or aperiodic array provides a unique way of tailoring the properties and response of incident waves.

The main applications of metamaterials are found in the industrial sectors like information and communication technologies (ICT), space sciences & defense, but new applications are emerging in health, energy, and environmental areas. Some notable examples of devices realized during the past few years are sensors, super-lensing, cloaking, and light-emitting diodes using dynamic, reconfigurable, and tunable metamaterials.

This technology is being improved further in the marketplace by metamaterials that provide added value over and above state-of-the-art approaches. The World Economic Forum listed plasmonic metamaterials as one of the ten emerging technologies in 2018. Also, the Global Metamaterials Market survey by Mforesight in 2018 predicts a compound annual growth of 36.4% in the next five years.

Keeping this unprecedented potential of metamaterials in view, the ICTP Winter College of 2025 will cover various types of metamaterials such as electromagnetic, planer/flat (metasurfaces), acoustics, thermal, mechanical, low-dimensional, etc.

TOPICS:

- Physics and Engineering of Complex Electromagnetic Metamaterials
- Analytical, Semi-analytical, and Numerical Modelling of Metamaterials and Metasurfaces



24 February - 7 March 2025



An ICTP Meeting



Deadline: 24 November 2024

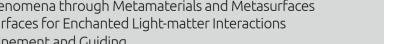
DIRECTORS:

H. CABRERA MORALES ICTP, Italy M. Q. MEHMOOD MUHAMMAD Information Technology University of the Punjab, Pakistan

LOCAL ORGANISER:

J. NIEMELA ICTP, Italy

- Fabrication and Experimental Characterization of Metamaterials
- Intelligent Design for Metamaterials and Metasurfaces
- Engineering Non-linear Light-matter Interactions Through Metasurfaces
- Tunable and Reconfigurable Metamaterial and Metasurfaces
- Reconfigurable Intelligent Surfaces for 6G (and beyond) Applications
- Plasmonics Metamaterials and Metasurfaces to Engineer Resonances and Scattering
- Metamaterials for Super-resolution and Near-field Imaging: Effects and Devices
- Device to System level Meta-optics for Next-generation Imaging and Sensing • Applications
- RF and Microwave Metamaterials: Design, Properties, Applications
- Millimeter Wave/THz Metamaterials and Applications
- Extraordinary Absorption and Transmission through Acoustic Metamaterials
- Chiro-optical and Asymmetric Phenomena through Metamaterials and Metasurfaces
- 2D and Transdimensional Metasurfaces for Enchanted Light-matter Interactions
- Photonics Crystals for Light Confinement and Guiding











FURTHER INFORMATION:



E-mail: smr4058@ictp.it

Web: https://indico.ictp.it/event/10823/

Female scientists are encouraged to apply.

GRANTS:

A limited number of grants are available to support the attendance of selected participants, with priority given to participants from developing countries. There is no registration fee.

