



The Abdus Salam
**International Centre
for Theoretical Physics**



6  **ICTP**
1964-2024

East African Summer School on Optics and Lasers

Description:

The scope of the school is to promote new theoretical and experimental methods, concepts, instruments, measurement techniques and data analysis routines for both Laboratory and industrial applications, as well as to coordinate international activities and collaboration in the area of Optics and photonics. By focusing on both theory and applications, the school will also provide an intersection of emerging techniques and experimental methods with theoretical advances in the field of Optics and lasers.

This summer school aims to build a larger workforce who will drive Lasers and photonics research to higher heights in future in the African continent and other developing countries.

The participants will be equipped with hands on training skills and be able to do some advanced experiments which they have never done in their respective institutions with the aim of transferring knowledge and skill.

We hope to motivate the participants to take up research activities in this field of Lasers and photonics.

This will be an opportunity for networking and learning from experts from abroad, who will share and motivate the young scientists in Africa and other developing countries (who will manage to attend the school), to pursue or carry out innovative projects in lasers and photonics. Innovative technology aspects of modern low-cost laser facilities will be covered experimentally in the hands-on activities.

TOPICS:

- Introduction to laser physics and Optical metrology
- Optics and quantum information
- Digital Holography Microscopy and Photothermal Spectroscopy
- Nano-optics and Optics metamaterials
- Chiral nanophotonics
- Flat optics: Enabling Novel Science and Applications
- Biomedical Optics with a focus on the theory and applications of near-infrared tissue spectroscopy for Point-of-Care monitoring of cerebral blood flow, metabolism, and oxygenation
- Y-shaped Diode lasers for Terahertz technology applications
- Isolated Attosecond pulses
- The potential of optical biosensor in bridging the diagnostic gap in developing countries
- Laser spectroscopy of atomic systems
- Optical fibre communication technology
- Advancing imaging technologies
- Lasers & photonics impact on Sciences for the society
- The squeezing light via self-induced transparency solitons
- Ultrashort Pump generation from Yb:YAG lasers
- Solar Pumped lasers
- Designing multicore fibers for high-power fiber amplifiers
- Kerr squeezing in fibers and sub-shot-noise interferometry
- Assessing the second-order correlation function of a quantum state from its Wigner Function
- Computational Electromagnetics and Photonics: From conventional fast solvers to the novel fractional formulations and their applications
- AI-Driven Biomedical imaging for Smart Diagnostics

SPEAKERS:

- H. CABRERA MORALES, ICTP, Italy
- A. CANDEO, Milan Polytechnic, Italy
- M. DIOP, Western University London, Canada
- H. FATTAH, Max Planck Institute for the Science of Light, Germany
- J. O. GWARO, Maasai Mara University, Kenya
- N. KALININ, Max Planck Institute for the Science of Light, Germany
- J. KAMUTI KALWE, Multimedia University of Kenya, Kenya
- D. KINYUA, Kirinyaga University, Kenya
- G. LEUCHS, Max Planck Institute for the Science of Light, Germany
- J. LI, Harbin Institute of Technology, China
- M. MAAZA, UNESCO-UNISA-iThemba LABS, South Africa
- M. Q. MEHMOOD, Information Technology University (ITU), Pakistan
- S. NJOROGE, Karatina University, Kenya
- E. OGARO, Multimedia University of Kenya, Kenya
- S. PEREIRA, TU Delft, The Netherlands
- G. K. RURIMO, Multimedia University of Kenya, Kenya
- M. SHIKHALI NAJAFABADI, Max Planck Institute for the Science of Light, Germany
- W. SULTANI, Information Technology University (ITU), Pakistan
- D. WASWA, Nelson Mandela Metropolitan University, South Africa
- M. ZUBAIR, Information Technology University (ITU), Pakistan



6 - 17 May 2024



Nairobi, Kenya



Deadline:

3 March 2024

DIRECTORS:

H. CABRERA MORALES, ICTP, Italy
J. O. GWARO, Maasai Mara University, Kenya
G. K. RURIMO, Multimedia University of Kenya

ICTP SCIENTIFIC CONTACT:

J. NIEMELA, ICTP, Italy

FURTHER INFORMATION:



E-mail: smr3934@ictp.it

Web: <https://indico.ictp.it/event/10472/>

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.

