

**EAST AFRICAN SUMMER SCHOOL ON OPTICS AND LASERS, SMR 3934
& LAUNCH OF MAX PLANCK PARTNER RESEARCH GROUP
6th MAY to 17th MAY 2024**

**SUMMER SCHOOL PROGRAMME
MONDAY, 6TH MAY, 2024**

TIME	ACTIVITY	FACILITATOR
SUMMER SCHOOL PRELIMINARIES – Room 1/Link 1 (here link)		
8:00 AM	Participants Sign in/Participants' arrival and registration Welcoming of Guests National Anthem & Opening Prayer	Summer School Secretariat/ NIOL Director MMU/ Summer School Local Organizers
8: 30 AM	Chief Guest and Guest Speakers Pay a Courtesy Call to the VC	AG. Deputy Vice Chancellor Academic Affairs, Research and Innovation Prof. Dr. Eng Livingstone Ngoo, PhD.
WELCOMING SPEECHES		
8:30AM	Introductory Remarks on the Summer School	Summer School Directors Dr. Jared Ombiro Gwaro- Kenya Dr. Humberto Cabrera (ICTP)-

8:40AM		Italy Prof Geoffrey Kihara Rurimo-Ag Deputy Vice Chancellor (A & F)
8:40 AM 9:30 AM	Opening Remarks (NRF, NACOSTI,MMARAU VC)	AG. Vice Chancellor MMU Prof. Rosebella O. Maranga, PhD, MBS
9:30 AM 9:50 AM	Opening Remarks Max Planck Institute for the Science of Light, Germany	Dr. Hanieh Fattahi, RGL, Max Planck Society
9:50 AM 10:10 AM	Guest Speaker The Abdus Salam International Center for Theoretical Physics, ICTP, Italy	ICTP local organizer Director Prof Joseph Niemela
	MMU VC to speak and invite the Chief Guest	
10:10 AM 10:40 AM	Chief Guest Cabinet Secretary Ministry of Education Honourable Ezekiel Machogu	AG. Vice Chancellor MMU Prof. Rosebella O. Maranga, PhD, MBS
10:40 AM 10:50 AM	Physical group photo for physical members	MMU photographers
10:50 AM 11: 20 AM	Launch of Max Planck partner Research Group	Prof Geoffrey Kihara Rurimo-Ag Deputy Vice Chancellor (A & F)
11:20 AM 11.30 AM	Tea/Coffee Break	Catering & Hospitality
11:30 AM 12:30 AM	The squeezing light via self-induced transparency solitons	Prof. Geoffrey Kihara Rurimo

	Dr. Mojdeh Shikhali Najafabadi, Max Plank Institute of science of light, Germany	
12:30 AM 1:30 PM	Light sheet fluorescence microscopy Alessia Candeo (Department of Physics at Politecnico di Milano) Italy	Dr. Jared Ombiro
1:30 PM 2:15 PM	LUNCH BREAK	Catering & Hospitality
2:15 PM 3:15 PM	Frequency analysis of imaging systems Prof. Sylvania Pereira, Netherlands	Dr. Jared Ombiro
3:15 -5PM	Introductory Laboratory Session	Lab technicians NIOL MMU/ Prof. Qasim/ Dr.Humberto/ Dr. Ombiro/ Dr Ogaro

TUESDAY, 7TH MAY, 2024

TIME	ACTIVITY	FACILITATOR
SUMMER SCHOOL PRELIMINARIES – Room 1/Link 1 (here link)		
8:00 AM 9:00 AM	Ultrashort pump generation from Yb:YAG lasers Dr.Hannieh Fattahi, Max Planck institute of science of light, Germany	Prof Geoffrey Kihara Rurimo
9:00 AM 10:00 AM	Ultrashort pump generation from Yb:YAG lasers Dr.Hannieh Fattahi, Max Planck institute of science of light, Germany	Prof Geoffrey Kihara Rurimo
10.00 AM 10.15 AM	Tea/Coffee Break	Catering & Hospitality
10:15 AM 11:15 PM	Advancing imaging technologies Alessia Candeo (Department of Physics at Politecnico di Milano) Italy	Dr. Humberto Cabrera

11:15 PM 12:15 PM	Advancing imaging technologies Alessia Candeo (Department of Physics at Politecnico di Milano) Italy	Dr. Humberto Cabrera
12:15 PM 1:15PM	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. Prof Mamadou Diop-Canada	Dr. Humberto Cabrera
1:15 PM 2:00 PM	LUNCH BREAK	Catering & Hospitality
2:00- 5:00 PM	Laboratory Session	Lab technicians NIOL MMU
4:00-5:00 PM	Tea/Coffee Break	Catering & Hospitality

WEDNESDAY, 8TH MAY, 2024

TIME	ACTIVITY	FACILITATOR
SUMMER SCHOOL PRELIMINARIES – Room 1/Link 1 (here link)		
8:00 AM 9:00 AM	Solar pumped lasers Dr.Hannieh Fattahi, Max Planck institute of science of light, Germany	Prof Geoffrey Kihara Rurimo
9:00 AM 10:00 AM	Solar pumped lasers Dr.Hannieh Fattahi, Max Planck institute of science of light, Germany	Prof Geoffrey Kihara Rurimo
10.00 AM 10.15 AM	Tea/Coffee Break	Catering & Hospitality
10:15 AM	Fresnel and Fraunhofer diffraction	Dr. Dickson Kinyua

11:15AM	Prof. Sylvania Pereira, Netherlands	
11:15 AM	Fresnel and Fraunhofer diffraction	Dr. Dickson Kinyua
12:15 AM	Prof. Sylvania Pereira, Netherlands	
12:15PM 1:15PM	Designing multicore fibers for high-power fiber amplifiers Dr. Nikolay Kalinin, Max Plank Institute of Science of Light, Germany	Dr. Dickson Kinyua
1:15 PM 2:00 PM	LUNCH BREAK	Catering & Hospitality
2:00- 4:00 PM	Poster Session/ Interaction activities/	Lab technicians NIOL MMU/ Dr Ombiro/ Dr Humberto
4:00-5:00 PM	Tea/Coffee Break	Catering & Hospitality

THURSDAY, 9TH MAY, 2024

TIME	ACTIVITY	FACILITATOR
SUMMER SCHOOL PRELIMINARIES – Room 1/Link 1 (here link)		
8:00 AM 9:00 AM	Optics and quantum information Prof. Gerd Leuchs, Max Planck Institute of Science of Light, Germany	Prof. Geoffrey Kihara Rurimo

9:00 AM 10:00 AM	Optics and quantum information Prof. Gerd Leuchs, Max Planck Institute of Science of Light, Germany	Prof Geoffrey Kihara Rurimo
10.00 AM 10.15 AM	Tea/Coffee Break	Catering & Hospitality
10:15 AM 11:15 AM	Flat optics: Enabling Novel Science and Applications Prof.Muhammad Qasim Mehmood- Information Technology University (ITU) Pakistan,	Dr. Elijah Ogaro
11:15 AM 12:15 PM	Flat optics: Enabling Novel Science and Applications Prof.Muhammad Qasim Mehmood- Information Technology University (ITU) Pakistan,	Dr. Elijah Ogaro
12:15 PM 1:15 PM	Analysis of coherent optical systems Prof. Sylvania Pereira, Netherlands	Dr. Elijah Ogaro
1:15 PM 2:00 PM	LUNCH BREAK	Catering & Hospitality
2:00- 4:00 PM	Laboratory Session	Lab technicians NIOL MMU
4:00-5:00 PM	Tea/Coffee Break	Catering & Hospitality

FRIDAY, 10TH MAY, 2024

TIME	ACTIVITY	FACILITATOR
SUMMER SCHOOL PRELIMINARIES – Room 1/Link 1 (here link)		
8:00 AM 9:00 AM	Kerr squeezing in fibers and sub-shot-noise interferometry Dr. Nikolay Kalinin, Max Plank Institute of Science of Light, Germany	Dr. Humberto Cabrera

9:00 AM 10:00 AM	Kerr squeezing in fibers and sub-shot-noise interferometry Dr. Nikolay Kalinin, Max Plank Institute of Science of Light, Germany	Dr. Humberto Cabrera
10.00 AM 10.15 AM	Tea/Coffee Break	Catering & Hospitality
10:15 AM 11:30 AM	Overview of Research at National Institute for Optics and Lasers	AG. Deputy Vice Chancellor Administration, Finance and Planning Prof Geoffrey Kihara Rurimo
11:30AM 12:30 PM	Assessing the second-order correlation function of a quantum state from its Wigner Function Dr. Mojdeh Shikhali Najafabadi, Max Plank Institute of Science of Light, Germany	Dr. Dickson Kinyua
12:30 PM 1:30 PM	Laboratory Session	Dr. Dickson Kinyua
1:30 PM 2:00 PM	LUNCH BREAK	Catering & Hospitality
2:00- 4:00 PM	Laboratory Session	Lab technicians NIOL MMU
4:00-5:00 PM	Tea/Coffee Break	Catering & Hospitality

SATURDAY, 11TH MAY, 2024

TIME	ACTIVITY	FACILITATOR
SUMMER SCHOOL PRELIMINARIES – Room 1/Link 1 (here link)		
8:00 AM	Participants Sign in/participants arrival and registration	Summer School Secretariat/ Marketing Officials MMU

8:30 AM		
8:30 AM 9:30 AM	Visit to Nairobi National park	Local organizers and NIOI group
9:30 AM 10:30 AM	Visit to Nairobi National Park	Local organizers and NIOI group
10.30 AM 11.00 AM	Tea/Coffee Break	Catering & Hospitality
11:00 AM 12:00 PM		
12:00 PM 1:00 PM		
1:00 PM 2:00 PM	LUNCH BREAK	Catering & Hospitality
2:00- 4:00 PM	Free afternoon	
4:00-5:00 PM		

SUNDAY, 12TH MAY, 2024

TIME	ACTIVITY	FACILITATOR
SUMMER SCHOOL PRELIMINARIES – Room 1/Link 1 (here link)		
8:00 AM 8:30 AM	Participants Sign in/participants arrival and registration	Summer School Secretariat/ Marketing Officials MMU

8:30 AM 9:30 AM	Visit to Nairobi City, and National Museum of Kenya	Local organizers and NIOI group
9:30 AM 10:30 AM	Visit to Nairobi City/National Museum of Kenya/ Uhuru park	Local organizers and NIOI group
10.30 AM 11.00 AM	Tea/Coffee Break	Catering & Hospitality
11:00 AM 12:00 PM		
12:00 PM 1:00 PM		
1:00 PM 2:00 PM	LUNCH BREAK	Catering & Hospitality
2:00- 4:00 PM	Free afternoon	
4:00-5:00 PM		

MONDAY, 13TH MAY, 2024

TIME	ACTIVITY	FACILITATOR
SUMMER SCHOOL PRELIMINARIES – Room 1/Link 1 (here link)		
8:00 AM 9:00 AM	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	Dr. Jared Ombiro

	oxygenation. Prof Mamadou Diop-Canada,	
9:00 AM 10:00 AM	Digital Holography Microscopy Dr. Humberto Cabrera (ICTP)- Italy	Dr. Jared Ombiro
10.00 AM 10:15 AM	Tea Break	Catering & Hospitality
10:15 AM 11:15 AM	AI-Driven Biomedical imaging for Smart Diagnostics Dr. Waqas Sultani - Information Technology University (ITU) Pakistan	Dr. Stephen Njoroge
11:15 AM 12:15 PM	AI-Driven Biomedical imaging for Smart Diagnostics Dr. Waqas Sultani - Information Technology University (ITU) Pakistan	Dr. Stephen Njoroge
12:15 PM 1:15 PM	The potential of optical biosensor in bridging the diagnostic gap in developing countries. Dr. Dickson Kinyua-Kenya,	Dr. Stephen Njoroge
1:15 PM 2:00 PM	LUNCH BREAK	Catering & Hospitality
2:00- 4:00 PM	Laboratory Session	Lab technicians NIOL MMU
4:00-5:00 PM	Tea Break	Catering & Hospitality

TUESDAY, 14TH MAY, 2023

TIME	ACTIVITY	FACILITATOR
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SUMMER SCHOOL PRELIMINARIES – Room 1/Link 1 (here link)		
8:00 AM 9:00 AM	Nanophotonics for Sustainable Development Goals & societal challenges Prof. Malik MAAZA, South Africa	Dr. Dickson Kinyua
9:00 AM 10:00 AM	Nanophotonics for green air-conditioning & smart optical windows Prof. Malik MAAZA, South Africa	Dr. Dickson Kinyua
10.00 AM 10.15 AM	Tea Break	Catering & Hospitality
10:15 AM 11:15 AM	Laser spectroscopy of atomic systems. Dr. Elijah Ogaro- Kenya	Dr. Stephen Njoroge
11:15 AM 12:15 PM	Hyperspectral imaging Alessia Candeo (Department of Physics at Politecnico di Milano) Italy	Dr. Stephen Njoroge
12:15 PM 1:15 PM	Photothermal Spectroscopy and Applications Dr. Humberto Cabrera (ICTP)- Italy	Dr. Stephen Njoroge
1:15 PM 2:00 PM	LUNCH BREAK	Catering & Hospitality
2:00- 4:00 PM	Laboratory Session	Lab technicians NIOL MMU
4:00-5:00 PM	Tea Break	Catering & Hospitality

WEDNESDAY, 15TH MAY, 2024

TIME	ACTIVITY	FACILITATOR
SUMMER SCHOOL PRELIMINARIES – Room 1/Link 1 (here link)		
8:00 AM 9:00 AM	Y-shaped Diode lasers for Terahertz technology applications. Dr. Jared Ombiro, Kenya	Dr. Wafula
9:00 AM 10:00 AM	Chiroptics, design and characterization of chiral metalenses Johnston Kamuti Kalwe-Kenya	Dr. Wafula
10.00 AM 10.15 AM	Tea Break	Catering & Hospitality
10:15 AM 11:15 AM	From James Clerk Maxwell's concept to nanofluids as a new generation of efficient coolants Prof Malik Maaza, South Africa	Dr. Humberto Cabrera
11:15 AM 12:15 PM	Collossal wavepacket localization: Anderson localization in Carbon Nanotubes & neutron confinement in nano-scaled Fabry-Perot resonators Prof Malik Maaza ,South Africa	Dr. Humberto Cabrera
12:15 PM 1:15 PM	Isolated Attosecond pulses Dr. Stephen Njoroge, Kenya	Dr. Humberto Cabrera
1:15 PM 2:00 PM	LUNCH BREAK	Catering & Hospitality
2:00- 4:00 PM	Lab Session	Lab technicians NIOL MMU

4:00-5:00 PM	Tea Break	Catering & Hospitality
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THURSDAY, 16TH MAY, 2024

TIME	ACTIVITY	FACILITATOR
SUMMER SCHOOL PRELIMINARIES – Room 1/Link 1 (here link)		
8:00 AM 9:00 AM	Optical fibre communication technology Dr. David Waswa - South Africa-Online	Dr. Jared Ombiro
9:00 AM 10:00 AM	Optical fibre communication technology Dr. David Waswa - South Africa-Online	Dr. Jared Ombiro
10:00 AM 10:15 AM	UNESCO International day of light celebrations	Dr. Jared Ombiro/Dr. Ogaro/Dr Wafula
10:00AM 11:00 AM	Exhibitions and Poster sessions/	Dr. Jared Ombiro/Dr. Ogaro/Dr. Wafula
10.30 AM 11.00 AM	Tea Break	Catering & Hospitality
11:00 AM 12:00 PM	Computational Electromagnetics and Photonics: from conventional fast solvers to the novel fractional formulations and their applications Dr. Muhammad Zubair - Information Technology University (ITU) Pakistan	Dr. Stephen Njoroge
12:00 PM 1:00 PM	Computational Electromagnetics and Photonics: from conventional fast solvers to the novel fractional formulations and their applications Dr. Muhammad Zubair - Information Technology University (ITU) Pakistan	Dr. Stephen Njoroge

1:00 PM 2:00 PM	LUNCH BREAK	Catering & Hospitality
2:00- 4:00 PM	Laboratory Session	Lab technicians NIOL MMU
4:00-5:00 PM	Tea Break	Catering & Hospitality

FRIDAY, 17TH MAY, 2024

TIME	ACTIVITY	FACILITATOR
SUMMER SCHOOL PRELIMINARIES – Room 1/Link 1 (here link)		
8:00 AM 8:30 AM	Participants Sign in/participants arrival and registration	Summer school Secretariat/ Marketing Officials MMU
8:30 AM 9:30 AM	Key Note speech from sponsors NRF/Optica/ICTP/	NIOL DIRECTOR
9:30 AM 10:30 AM	Feedback from participants	Dr. Ombiro
10.30 AM 11.00 AM	Tea Break	Catering & Hospitality
11:00 AM 12:00 PM	Award of Certificates	Local organizers/ ICTP team / VC MMU
12:00 PM 1:00 PM	Vote of Thanks	Dr.Jared Ombiro/Prof Geoffrey Kihara / Dr Humberto Cabrera

1:00 PM 2:00 PM	LUNCH BREAK	Catering & Hospitality
2:00- 4:00 PM	Participants preparations for departure	Local organizers and NIOOL group
4:00-5:00 PM	Tea Break	Catering & Hospitality

Experiments during the hands on training	
Group 1 Light sheet fluorescence microscopy: basics and setting up Dr. Alessia Candeo	
Group 2 Basics of diffraction and diffractive optics elements Prof. Sylvania Pereira, Netherlands	
Group 3 Conventional optical system design in Zemax Prof M. Qasim Mehmood	
Group 4 Design & optimization of meta-optical devices through computational solvers Prof M. Qasim Mehmood	

Group 5

CAD designs for 3D-printed optical systems

Prof Qasim Mehmood

Group 6

Open-source ray tracing optimization for meta-optics

Prof Qasim Mehmood

Group 7

Open-source ray tracing optimization for meta-optics

Prof Qasim Mehmood