

ICFO INTERNATIONAL SCHOOL ON THE FRONTIERS OF LIGHT: Photonics with free electrons

July 05, 2023 to July 07, 2023
ICFO Auditorium (Barcelona) & Online (Zoom)

PLEASE NOTE: WE ARE EXPERIENCING TECHNICAL ISSUES WITH THE ONLINE CONNECTION AND WE ARE NOT ABLE TO STREAM THE SESSIONS ONLINE. APOLOGIES FOR THE INCONVENIENCE.

Electrons play a pivotal role in photonics through processes underlying the optical response of materials, for example in plasmonic and excitonic optical modes. The decay of optical excitations through an ultrafast cascade of electronic processes is also the subject of an active field of research for its implications in light harvesting, optical sensing, and catalysis, as well as free-electron and solid-state light sources. Likewise, ultrafast electronic processes down to attosecond and smaller time scales is intimately related to how electrons behave in the presence of optical excitations. Adding to this broad perspective on electrons for

photonics, recent advances in the control and understanding of free electrons and their interactions with optical fields has emerged as a powerful area with high potential to revolutionize photonics from a fundamental viewpoint, but also in anticipation of electron-based photonic applications beyond those that exist nowadays. This school will provide an overview on this emerging field based on lectures by leading researchers over a wide variety of specific subjects.
This **3-day international school** will cover topics including:

Instrumentation and advanced electron spectroscopies
Correlation and coherence in electron-beam interaction with photonic materials
Imaging and spectroscopy of nanomaterials
Ultrafast electron-based microscopy and spectroscopy

The event will include lectures, discussion sessions, student talks and a poster session where participants will have the opportunity to interact and present their own research.
Lectures will be broadcast **online** and are open to interested students and researcher worldwide.
Lecturers:

Albert Polman, AMOLF
Mathieu Kociak, Universite Paris-Saclay
Andrea Kone?na, Brno University of Technology
Claus Ropers, Max Planck Institute of Multidisciplinary Sciences
Nahid Talebi, Uni Kiel
Peter Hommelhoff, Uni. Erlangen

Registration & Accommodation:
The school will be limited to a maximum of **30 external students**, selected on the basis of academic merit.
Local accommodation for 4 nights will be provided for a maximum of 30 external participants from outside the Barcelona region.
There is NO fee for students to attend the school.
Travel Fellowships:
ICFO will offer up to **5 SPIE@ICFO Chair Travel Fellowships** for selected undergraduate o masters students from outside the Barcelona region to attend the school.
All eligible applicants will be automatically considered for travel fellowships.
The fellowships will include reimbursement of travel expenses of up to ?350 and accommodation for 4 nights.
Research Internships:

Up to two **SPIE@ICFO Chair Research Internships** to conduct a project with an ICFO researc group are also available on a competitive basis to outstanding undergraduate or master students selected to attend the school. To be eligible, students must still be enrolled in a undergraduate or masters program when they undertake the internship.
For any questions, please contact us at frontiers@icfo.eu

Eligibility:?

We welcome applications from individuals worldwide with a variety of backgrounds, including optics, physics, mathematics, electronics, engineering, chemistry and biology.??
Candidates must have an excellent academic record, and a strong commitment for scientific research.??
Priority will be given to masters-level and advanced undergraduate students, although PhD students and young researchers are welcome to apply.??
Persons with disabilities are strongly encouraged to apply. There are no restrictions of citizenship or gender.?

How To Apply:

To register for the school applicants must submit:

A Curriculum Vitae, including contact details?
Scanned copies of your complete (Bachelor and Master equivalent) University academic transcripts in English or Spanish?
A one-page (max.) letter describing your background, research interests and motivation for attending the school.?
Title & abstract for a proposed contributed talk or poster?
Contact details of one potential referee

Applications must be submitted online, and all required application material must be complete in order to be considered.?
Applicants will automatically be considered for the fellowships and / or internships on offer.
The deadline for applications is 14 May. Successful applicants will be notified during the wee of 22 May?
For any questions, please contact us at frontiers@icfo.eu

Venue:

ICFO is a young research institution that aims to advance the very limits of the science and technology of light, tackling important challenges faced by society at large in all areas of life, including health, energy, information, safety, security and caring for the environment. ICFO is a member of BIST, the Barcelona Institute of Science and Technology, and is situated in Castelldefels, a small town located by the sea just outside of Barcelona, Spain.
More information about how to get to ICFO can be found HERE.

About:

International Schools on the Frontiers of Light aim at giving talented young researchers and students worldwide a first introduction to a thematic research area and a taste of an international research environment. These schools incorporate a dynamic and social learning environment beyond participating in lectures, including group discussions, direct interactions with the lecturers, student talks and poster presentations.
International Frontiers Schools aim to be inclusive and welcoming, and adhere to ICFO's policy on Diversity in Conferences, Meetings and Workshops.?

The organizers do not tolerate any type of conduct or behavior considered harassment o bullying and follow ICFO guidelines onHarassment & Bullying.?

Scientific Organisers:

ICREA Professor Dr Javier Garcia de Abajo (ICFO), Prof Dr Robert Sewell (ICFO), Dr. Giovanna Petrillo (ICFO).