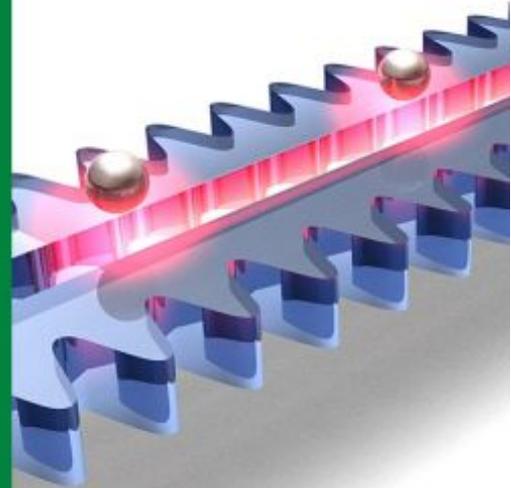


## ICFO-WEIZMANN SCHOOL ON THE FRONTIERS OF LIGHT

New Approaches  
to Atom-Light Interactions  
5-8 July 2021  
Barcelona & Rehovot



# ICFO-Weizmann School on the Frontiers of Light: New Approaches to Atom-Light Interactions

July 6-8, 2021 Barcelona & Weizmann, Rehovot

May 03, 2021

Efficient and coherent interfaces between atoms and light hold the promise to unlock diverse applications in quantum technologies and novel opportunities to explore exotic quantum phenomena. Despite spectacular progress, many of the goals that researchers want to achieve remain elusive. This school will expose young researchers to some of the recent exciting approaches aimed at creating a powerful new generation of atom-light interfaces and the resulting possibilities. The new platforms to be covered include ordered atomic arrays, ensembles of Rydberg atoms, atomic interfaces with nano- and micro-photonic structures, and superconducting circuit QED-based systems.

This 4-day joint school will be held in-person at the ICFO and Weizmann hubs, with lectures at one location simulcast to the other.

The organizing faculty members are Darrick Chang & Robert Sewell (ICFO), Ofer Firstenberg & Ephraim Shahmoon (Weizmann Institute of Science).

**Travel Fellowships** are available to outstanding applicants to attend one of the hubs. The deadline for applications is **Friday 28 May 2021**.

### Lectures & Topics

**Daniel Barredo**, CINN - CSIC & Institut d'Optique - CNRS, Quantum simulation of many-body systems using arrays of individual Rydberg atoms

**Mariona Moreno Cardoner**, Institute of Cosmos Sciences of the University of Barcelona (ICCUB), Quantum Optics with Atomic Arrays

**Emanuele Dalla Torre**, Department of Physics and Center for Quantum Entanglement Science and Technology (QUEST), Bar-Ilan, What is the difference between lasing and superradiance (and how do we see it in an experiment)?

**Barak Dayan**, Weizmann Institute of Science, Optical Cavity-QED: quantum coupling between single photons and single atoms

**Ofer Firstenberg**, Weizmann Institute of Science, Quantum nonlinear optics in atomic ensembles

**Pol Forn-Diaz**, Institute for High Energy Physics (IFAE), Ultrastrong light-matter interactions in superconducting circuits

**Juanjo Garcia Ripoll**, Instituto de Fisica Fundamental, CSIC, Quantum optics with superconducting quantum circuits

**Alejandro Gonzalez Tudela**, Instituto de Fisica Fundamental-CSIC, Quantum optical phenomena in (topological) photonic crystals

**Ido Kaminer**, Technion, Does an electron wavefunction collapse when interacting with light?

**Alicia Kollar**, University of Maryland, Does an electron wavefunction collapse when interacting with light?

**Ephraim Shahmoon**, Weizmann Institute of Science, Quantum optics of atomic arrays

### 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.

ICFO and the Weizmann Institute of Science do not tolerate any type of conduct or behavior considered harassment or bullying and have clear defined policies against [harassment](#).

### Participating Institutions

**ICFO - the Institute of Photonic Sciences**, 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.

**Weizmann - the Weizmann Institute of Science** is one of the world's leading multidisciplinary basic research institutions in the natural and exact sciences. [AMOS@Weizmann](#) is a center for quantum physics with atomic, molecular, and optical systems. The center includes 1 research groups and activities ranging across most contemporary topics in AMO physics from attosecond pulses and intense lasers, through precision spectroscopy of ultracold atoms, molecules or ions, to quantum information and quantum optics.



Host Institutes



Support received

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