

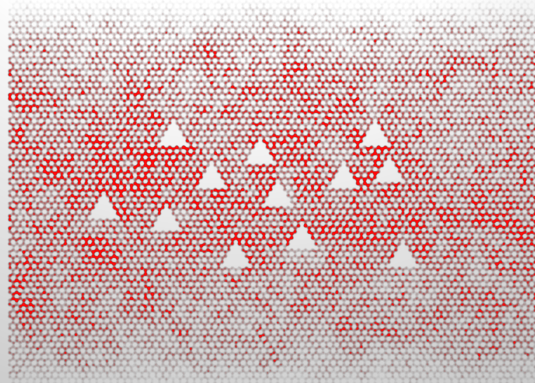
EXCITON-POLARITONS IN SEMICONDUCTOR MICROSTRUCTURES AND QUANTUM OPTICS

INTERNATIONAL WORKSHOP
April 28 – May 2, 2025

Quantum optics has revolutionized our lives and continues to drive advancements in fundamental science and emerging technologies, enabling novel approaches to information processing and light-matter interactions. Light provides us with high-speed internet via data transmission over long distances and cuts iron while manufacturing. Quantum optics plays a key role in developing secure communication channels and next-generation computing systems capable of demonstrating quantum computational advantage. An inalienable topic in modern condensed matter physics and quantum optics is polaritonics. Exciton-polaritons are half-light and half-matter bosonic quasiparticles formed due to the strong coupling of high-quality factor cavity photons and excitons in embedded semiconducting quantum wells, or two-dimensional or organic semiconductors. The exciton-polariton platform allowed experimental observation of Bose-Einstein condensation and superfluidity, visualization of topological states in artificial optical lattices, and implementation of flat-band systems. It also offered a novel approach to information processing, including all-optical gates and qubits, functioning up to room temperatures. The Exciton-Polariton and Quantum Optics Workshop in Daejeon will gather experts in the field to present their recent advances and discuss new ideas.

Topics include:

- ▶ Bose-Einstein condensation
- ▶ Artificial optical lattices
- ▶ Quantized vortices and solitons
- ▶ Gross-Pitaevskii and complex Ginzburg-Landau equations
- ▶ Quantum information processing
- ▶ Optical circuits
- ▶ Topological polaritonics



To apply for participation in the Workshop, complete the online application form by **April 15, 2025**.

For further information, see pcs.ibs.re.kr
or contact the PCS Visitor Program at pcs@ibs.re.kr

Invited Speakers

Aleksey Akimov (Russia)
Boris Altshuler (USA)
Sergey Alyatkin (Russia)
Igor Aronson (USA)
Alberto Bramati (France)
Chang-Hee Cho (Korea)
Yong-Hoon Cho (Korea)
Hyoungsoon Choi (Korea)
Nikolai Gippius (Russia)
Mikhail Glazov (Russia)
Maxim Golarch (Russia)
Fabrice Laussy (Spain)
Young-Sik Ra (Korea)
Pavlos Savvidis (China)
Marina A. Semina (Russia)
Polina Sharapova (Germany)
Ivan Shishkin (Austria)
Oleg Utesov (Korea)
Alexei Yulin (Russia)

Scientific Coordinators

Sergei V. Koniakhin (Korea)
Anton V. Nalitov (Russia)
Michael D. Fraser (Japan)

Organizers

Gileun Lee (Korea)