Room 2

14:00–16:00
M3B • Panel: Programmable Photonic Chips for Artificial Intelligence, Computing and Optical Networks

As integrated photonics technology enables increasingly large-scale photonic circuits, a new generation of photonic chips that can be programmed for a wide variety of functions is being developed. Such "programmable photonic circuits" have strong potential in key areas such as artificial intelligence, quantum computing, and optical networks. However, many open questions remain at each layer in the technology stack:

- What are the key photonic building blocks of such circuits? What are the best circuit architectures? At what level should components be provided vs. synthesized?
- Which foundry technologies are best suited to developing these chips? What device performance metrics need to be achieved? How should specialty devices be included?
- What electrical control is needed? How can it best be integrated into the chip? What programming strategies should be employed?
- What interfaces should be provided for the programmer? How will these chips be packaged to interact with the rest of the system?
- Which applications can most benefit and how? When does a programmable chip make more sense than an application specific circuit? When do we expect such chips to be in wide-spread use?

This panel aims to address these important questions related to the technological barriers, current performance, and potential applications of programmable photonic chips.

Speakers:

Keren Bergman, *Columbia University, USA*

Wim Bogaerts, *Ghent University, Begium*

Jose Capmany, *IPronics, Spain*

Joyce Poon, *Max Planck Institute, Germany*