

Photonics Lecture

18 July 2025 | 11:00h | A1

Resonant electro-optic photonics for communications, computation, and sensing

Dynamical control of the optical properties of materials lays the groundwork for reconfigurable flat optical devices, tunable devices that can learn from optical inputs, and energy-efficient chip-scale communications and computation platforms that promise to reduce the energy consumption of the modern telecommunications infrastructure. One particularly appealing method to achieve this relies on electro-optics, which provides a direct connection between driving electronics and optical properties of materials. Integrating electro-optic materials into micro and nanostructures heralds a new generation of devices with light-matter-microwave interactions much stronger than bulk devices, creating a platform for new and unprecedented photonic devices.

In my talk, I will discuss device demonstrations using Lithium Niobate on Insulator, including optical modulators and nanophotonics, and their applications in communications, computation, and sensing, with an outlook on emerging materials and systems.



Dr David Barton,
Assistant Professor of
Materials Science and
Engineering,
Northwestern University,
Illinois (USA)