

Integrated electro-optics on thin-film lithium niobate: From device to system

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Lithium niobate is a material with a wide range of applications in optical and microwave technologies. Recent developments on thin-film lithium niobate (TFLN) photonics have led to integrated lithium niobate devices that support both high confinement and low propagation loss. Such breakthroughs provide a photonic platform that offers efficient, high-speed, and low loss interface between electronics and photonics, enabling ultrafast control of light using microwaves, excellent scalability to large scale, strong photon-photon interaction, and long photon lifetime. In this talk, I will discuss our recent developments on electro-optics on thin-film lithium niobate from device level to system level, including high-performance frequency shifters and beam splitters, high-efficiency and broadband electrooptic frequency combs, high-dimensional frequency crystals, frequencydomain mirrors, and large-scale system-level applications.

Short Bio:



Yaowen Hu is an assistant professor at School of Physics, Peking University. He received his Bachelor of Science in Physics at Tsinghua University in 2018 and PhD in Physics at Harvard University in 2023. After graduating, he was the

postdoctoral fellow at Harvard University during 2023-2024. He joined Peking University in 2024. His research is focused on integrated electro-optics on thinfilm lithium niobate, including photonic neuromorphic computing, quantum optics, nonlinear optics, microwave photonics, non-Hermitian and topological photonics, optical frequency comb, etc.