**Non-classical light generation and control on thin-film lithium niobate photonic integrated circuits**

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Integrated photonics provides a viable solution to scale today’s photonic quantum technologies toward complex systems for practical computation and simulations. Generically, a photonic quantum system needs to be able to generate, control, and detect quantum states of light. Among various material systems, thin-film lithium niobate (TFLN) has emerged as a promising platform for integrated quantum photonics. It offers large electro-optic (EO) and χ(2)-nonlinear coefficients, and allows flexible ferroelectric domain engineering, enabling efficient photon manipulation and generation. In this talk, we will describe our recent results on implementing some key quantum functionalities on this platform, including efficient photon-pair generation in periodically poled TFLN waveguides, bi-photon frequency comb generation in TFLN microresonators, single-photon spectral control using TFLN electro-optic modulators, and integrating superconducting nanowire detectors on TFLN waveguides.

**Short Bio:**

Di Zhu is an assistant professor in the Department of Materials Science and Engineering at National University of Singapore (NUS). He also holds joint appointments with Agency for Science, Technology and Research (A\*STAR) and Centre for Quantum Technologies (CQT) in Singapore. Di received his B.Eng. from Nanyang Technological University and Ph.D. from Massachusetts Institute of Technology, all in Electrical Engineering. His PhD thesis was on superconducting nanowire single-photon detectors, and postdoc research at Harvard University was on thin-film lithium niobate photonics. Di was a recipient of the Singapore National Research Foundation (NRF) Fellowship, NUS Presidential Young Professorship, Harvard Quantum Initiative (HQI) Postdoctoral Fellowship, and MIT Jin-Au Kong thesis award. His current research interests include integrated quantum photonics, applied superconductivity, nanophotonics, and nanofabrication.