Silicon Optical Phased Array for Wide Angle Optical Beam-Steering

Zhejiang University, China

Yaocheng Shi
Email: yaocheng@zju.edu.cn

With the growing demand for automotive LiDAR, optical phased array (OPA) is considered to be one of the leading technologies since it provides all-solid-state beam steering without mechanical scanners. The OPAs realize beam steering based on the principle of changing the optical phase in the waveguide array unit, which will modulate the wave fronts of the emission beam. In this talk, high-speed, low-power, and wide-beam-steering-angle optical phased arrays based on silicon-on-insulator (SOI) platform will be introduced. To overcome the limitation of grating lobes, waveguide arrays with non-uniform widths is utilized as the emitter. With such design, there will be no high-order grating lobes in the far field. The OPA with a wide field of view, which is not limited to the angles of grating lobes has been demonstrated. Furthermore, novel structures utilized to realize two-dimensional wide-angle beam steering will also be introduced.

Short Bio:

Prof. Yaocheng Shi is from College of Optical Science and Engineering, Zhejiang University, Hangzhou, China. Prof. Shi's research activities are focused on silicon photonic integrated devices for optical communications, optical interconnections, as well as optical sensing. Prof. Shi has published more than 170 peer reviewed papers, and his papers have been cited by >7000 times. He is the receiptant of National Natural Science Fund for Excellent Young Scholars in 2019.