

High Baudrate Short-Reach Communication **Oskars Ozoliņš, Xiaodan Pang, Vjaceslavs Bobrovs**

Highly challenging requirements are set for optical links by the ever-growing internet traffic demands for high-performance computing (HPC) and the Data Centers. Scaling the link capacity to 800 GbE or even 1.6 TbE in an economically viable way is the key. Single lane data rates of 200 Gbps are desirable to reduce the lane count and footprint. In addition, high-speed computing has stringent requirements when it comes to low latency and loss. Multilevel pulse amplitude modulation (PAM) can be used to increase the capacity for bandwidth limited components but sets stringent requirements in terms of linearity and noise tolerance for driving electronics and photonics. Therefore, it is worth considering the on-off keying (OOK) for this type of short-reach communication. In recent years, an increasing number of demonstrations showing 200 Gbps per single lane in the intensity modulation direct detection (IM/DD) systems have been reported. Promising alternatives enabled by broadband optoelectronic components are demonstrated, including monolithically integrated transmitters such as externally modulated lasers (EML) or directly modulated lasers (DML), or InP Mach Zehnder Modulators (MZM), or electrically pumped laser transmitter on thin-film Lithium Niobate (TFLN) platform, and external modulator-based transmitters such as silicon-photonics modulator, plasmonic modulator, or TFLN Mach-Zehnder modulator (MZM). We are welcoming papers that are addressing simple digital signal processing in short reach optical interconnects and support low energy consumption.