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Navigating the Future: Addressing Key Challenges in Optical Communications

This presentation provides an overview of the ongoing research activities at the Institute of Photonics and Quantum Electronics in the field of optical communication systems and networks. We will explore innovative approaches such as ultra-dense co-packaged optical transceivers utilizing multi-core and few-mode fibers, high-symbol-rate space-division multiplexed fiber-optic links, coherent passive optical networks, and advanced free-space optical links designed to withstand atmospheric turbulence. These cutting-edge developments aim to enhance the performance and reliability of optical communication technologies, addressing the growing demands for high-capacity data transmission.