

## **Future of Communication and Integrated Nano Devices**

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A few years ago the bandwidth offered by a fiber channel seemed to offer abundant capacity. Yet, new bandwidth demanding applications have led to an ongoing exponential growth of Internet based traffic such that we are rapidly approaching the ultimate Shannon capacity limit of the fiber.

In this talk we will review trends and techniques that are currently investigated to exploit the full potential offered by the fiber channel. We will start our review by discussing the physics of superchannel transmission systems and flexgrid fiber systems. We will look into new concepts for efficient modulation formats and we will review receivers and transmitters as basic building blocks of fiber links. Last but not least we will show how speed, power consumption and footprint can be further improved with novel next generation nano-photonic devices.