

Master Thesis:

Burst-Mode Digital Signal Processing for Coherent Passive Optical Networks

The introduction of advanced cloud-based services, leads to an increasing demand for high-speed optical access networks. The widely used passive optical networks need to be upgraded to higher data rates, without compromising reach, split ratio, and cost. The IPQ is working on a novel 100-Gbit/s colorless coherent PON architecture, which improves the receiver sensitivity and allows for digital impairment compensation. In upstream direction, these PONs will require optimized burst-mode digital signal processing algorithms.

Your Tasks:

- Study of data/aided schemes for timing recovery, equalization, and phase recovery
- Optimization of the burst structure
- Performance characterization for different modulation formats (DP-QPSK and DP-16QAM)
- Analysis of performance-vs-complexity trade-offs

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