

Master's Thesis

Path-Loss Average Techniques for the Nonlinear Fourier Transform

In an attempt to improve achievable rates of optical communication systems in the high input power regime, modulation via the nonlinear Fourier transform (NFT) has attracted some attention in recent years. Since the NFT was conceived for the deterministic lossless nonlinear Schrödinger equation (NLSE), the fiber loss present in realistic optical communication systems degrades the achievable data rates for NFT aided communication systems. Some mitigation techniques are known that can be used to mitigate the negative effect of fiber loss during propagation.

In this thesis the student is required to make him-/herself familiar with the fundamental concepts of the nonlinear Fourier transform (NFT) and implement algorithms for the forward and backward transforms. Then a purely solitonic transmission systems should be evaluated with and without path-loss averaged (PLA) approaches for different fiber models and amplification schemes.

Prerequisites

Lecture: Optical Communication Systems

Other: Matlab

Contact

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