Title: Compensation of Common Phase Error in Coherent Optical OFDM Systems using Image Processing Techniques.

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Abstract:
We propose to adopt an image processing based approach to estimate and compensate common phase error in coherent optical OFDM systems. Minimum or best-fit bounding box method, which is widely used in image processing to correct the skew of images, is used to rectify the signal constellation rotation in the optical OFDM signal, due to the presence of optical phase noise. We have further performed detailed characterizations including root mean square error analysis, laser linewidth tolerance, linear and nonlinear noise tolerance, via numerical simulations and experiments. The proposed method can greatly improve the spectral efficiency and achieve comparable system performance, as compared with the common pilot-aided method.