Abstracts

Heterodyne and Coherent Optical Fiber Communications: Recent Progress

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The technical significance, history of research and development, relevant technical tasks, and recent progress in heterodyne and coherent optical fiber communications are described. The achievements of 1-MHz frequency stability (peak-to-peak) and 0.1-MHz spectral purity (3-dB spectral width) with semiconductor lasers have been two principal motivations that accelerated the research and development. Rapid progress in the single-polarization single-mode fiber technology is also encouraging. The bit-error rate of a PCM-ASK/heterodyne optical communication system has been measured as a function of the received signal level, showing a good error performance close to the quantum-noise limitation.

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