Four-wave mixing analyses for future ultrafast wavelength conversion at 0.64 Tb/s in a semiconductor optical amplifier

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Abstract. This paper describes numerical and analytical analyses relating to the use of nonlinear four-wave mixing in a semiconductor optical amplifier medium for anticipated wavelength conversion at ultrahigh data rates of 320 and 640 Gb/s. The proposed system guidelines and design show that a maximum wavelength shift of 30 nm can be achieved at 640 Gb/s, while still maintaining an acceptable bit error rate. In addition, the impact of the pump–probe ratio and semiconductor optical amplifier bias current are investigated and the results are reported.

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Topics
Four wave mixing; Semiconductor optical amplifiers; Amplifiers

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