

Abstract

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Far Off Resonance AFBG for Dispersion Compensation in Transmission

The use of apodized fiber Bragg fiber gratings (AFBGs) with far off resonance for dispersion compensation, when operated in transmission, is investigated using the asymptotic form of the bandwidth as a measure for the performance of the dispersion compensator. An analytic expression for the quadratic and cubic dispersion of the fiber Bragg grating (FBG) is obtained at frequencies far from the Bragg condition, where the usual coupled mode theory (CMT) fails. This is used to investigate the effect of apodization on quadratic and cubic dispersion of the off resonance grating for eight different apodization profiles. It is also used to calculate the figure of merit (FOM), which emphasizes the same results obtained by the asymptotic form of the bandwidth method.