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Transmission analysis of long-period fiber grating with trapezoid index modulation

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Keywords

long-period fiber grating, trapezoid index modulation, transmission spectrum

Abstract

The long-period fiber grating (LPG) with trapezoid index modulation is presented as a novel grating. The influence of the difference between the top width and the bottom width (simplified to *d* in the following text) of the trapezoid index modulation on the transmission characteristics is analyzed. Calculated results show that the resonance location displaces to the long wavelength when the *d* increases. Compared with the long-period fiber grating with rectangle index modulation, the advantage of this novel grating is that it needs a smaller refractive index change. When *d* is zero, this model can be used to simulate the LPG with a rectangular index modulation, and the theoretical results are in good agreement with the experimental ones.