Physics > Optics

Light tunneling inhibition in array of couplers with combined longitudinal modulation of refractive index

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We consider light tunneling inhibition in periodic array of optical couplers due to the specially designed longitudinal and transverse modulation of the refractive index. We show that local out-of-phase longitudinal modulation of refractive index in channels of directional couplers in combination with the global refractive index modulation between adjacent couplers allow simultaneous suppression of both local and global energy tunneling inside each coupler and between adjacent couplers. This enables localization of light in single waveguide despite the remarkable difference of corresponding local and global energy tunneling rates.

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