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Modulational instability in asymmetric nonlocal media with optical lattices

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Abstract

A theoretical investigation of the modulational instability (MI) and propagation properties of light in asymmetric nonlocal media with the effect of lattice depth. By using the linear stability analysis, the generic properties of the MI gain spectrum are demonstrated for the asymmetric response and periodic linear refractive index modulation (optical lattices). The impact of the nonlocal parameter and the lattice depth are investigated. We have seen that the magnitude of the MI gain decreases when the nonlocal parameter increases, and increases slightly when the lattice depth increases. Through numerical simulations, we obtain that controllable soliton propagation in asymmetrical nonlocal media can be achieved.

Keywords: Modulational instability, asymmetric nonlocal nonlinearity

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