



## Spatial modulation instability of coherent light in a weakly-relaxing Kerr medium

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### Abstract

Résumé en anglais

We report on a theoretical analysis of spatial modulation instability of coherent light propagating in a nonlinear medium with a noninstantaneous Kerr response. The latter is of a relaxing Debye type and originates from diffusive molecular reorientation. We consider the examples of harmonic and pulse-like perturbations superimposed either on a monochromatic temporal background or on a quasi-monochromatic Gaussian pulse. Our analysis reveals that the finite duration of the nonlinear response is responsible for spatiotemporal dynamic features that obviously do not exist within the framework of the usual scalar nonlinear Schrödinger equation, which models spatial modulation instability in an instantaneous Kerr medium.

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### Liens

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