

Abstract Submitted
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Light Propagation in Quasi-Ordered Media RANDALL TAGG, MASOUD ASADI-ZEYDABADI, University of Colorado at Denver and Health Sciences Center — We evaluate the use of light to probe patterns in optical media whose index of refraction is modulated in the direction of propagation over length scales large relative to the optical wavelength. First, we show how a quadratic index waveguide with periodic axial variations induces a parametric instability in the geometric optics limit. A fundamental scaling allows us to examine a wide range of physical conditions and explore nonlinear behavior such as resonance and chaos. Second, we show that a periodic array of cylinders acts as a waveguide and also shows resonances. We consider the possibility for using these results to probe order-disorder phenomena in systems as widely different as fluid flows and living tissues.

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