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Wave Propagation and Parametric Instability in Materials Reinforced by Fibers With Periodically Varying Directions

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Abstract

This paper concerns the propagation of plane harmonic waves in an infinite fiber-reinforced elas medium. The composite material is represented by an equivalent homogeneous transversely isotro matter whose preferred directions coincide with the orientations of the fibers. The fibers are assum to wobble periodically about a dominant direction, all fibers being parallel to each other. T wobbliness endows the material with a structural periodicity which generates dispersion at frequencies and instability for various frequency bands. The zones of instability are analyzed in so detail.

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Topics: Fibers , Wave propagation , Composite materials , Matter , Waves , Electromagnetic spectrum

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