

WAVES IN DISPERSIVE ELASTIC SOLIDS

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The equations of nonlinear elastodynamics have attracted the attention of pure and applied mathematicians alike since the second half of the last century. Nevertheless, many aspects of this theory are still obscure or need a more systematic analysis. Here we study wave propagation in an isotropic elastic solid by taking into account effects due to dispersion. Specifically, we determine a class of global (in both time and space) solutions, find exact solutions for longitudinal travelling waves within the framework of fourth-order theory of weakly nonlinear elasticity, and derive two asymptotic reductions of the governing equations for waves of small amplitude.