FSM2S_11512

XXI International Congress of Theoretical and Applied Mechanics
Warsaw, Poland, August 15–21, 2004

Chaos in Wave Front Propagation in Heterogeneous Media

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Appearing of chaos at an propagation of waves in the determined heterogeneous media to investigation in the general case yet it is not possible. The ray method allows to reduce partial differential equation to the ordinary nonlinear differential equations, to which investigation it is possible to apply methods of nonlinear dynamic of systems. The closed systems of the equations describing geometry of rays, wave front and intensities of waves of jump of stress for volume and surface waves in a heterogeneous elastic medium are obtained. Stochastization of rays causes a chaotization of parameters of interior geometry of wave surfaces and intensities of waves. It is shown, that in a case bivariate of heterogeneous media in an approximation of cubic nonlinearity the equation of a ray is reduced in the Duffing's equation.

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