

ACOUSTICS2008/2822 Floquet Lamb modes in periodic plates

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An elastic waveguide with periodic perturbation of its thickness or of its elastic properties can support Floquet modes that are the extension of the classical Lamb modes. In this work, we obtain the spectra of the Floquet modes by using a new numerical coupled mode method which is based on a pseudospectral discretization in the transverse direction and a Magnus exponential integration in the longitudinal direction. The Floquet mode spectra are analyzed and compared to the Lamb mode spectra for different configuration of the periodic perturbation of the plate. A particular emphasis is given to the existence of backward wave propagation and to the number of propagating modes as the frequency is increased.