

ACOUSTICS2008/666
**Velocity dispersion analysis of acoustic scattering wave from
elastic shells**

Cao Zhengliang, Du Shuanping, Zhou Shihong and Cong Weihua
State Key Lab Ocean Acoustics, Hangzhou Appl Acous Res Inst, Rm 1510 No 96 HuaXing Rd, 310012
Hangzhou, China

In recent years the analysis of velocity dispersion of circumferential waves (or surface waves), excited by an incident plane wave to an elastic cylindrical or spherical shell, has theoretically provided valuable insight into the underlying mechanisms of scattering. In the present study, an approach of velocity dispersion analysis on acoustic scattering wave is advanced for the data induced by a spectral bandwidth signal. The method, based on a signal processing technique in time-frequency domain, is examined with simulating waveforms scattered from an elastic spherical and cylindrical shell respectively by linear frequency-modulated signal. In addition, the forward scattering waves of an elastic cylindrical shell filled with fluid is obtained by a line horizontal array in laboratory waveguide, and the results of velocity dispersion is compared with that of theoretical calculation. [Work supported by the National Natural Science Foundation of China (Grant No. 10704068)]