1057-74-10 **Kazumi Tanuma*** (tanuma@math.sci.gunma-u.ac.jp), Kiryu, Gunma 376-8515, Japan, and **Chi-Sing Man**, **Gen Nakamura** and **Shengzhang Wang**. *Perturbation and dispersion of Rayleigh waves in prestressed anisotropic elastic media.*

Rayleigh waves are elastic surface waves which propagate along the traction-free surface with the phase velocity v_R in the subsonic range and whose amplitude decays exponentially with depth below that surface. Such waves serve as a useful tool in nondestructive characterization of materials. The problem there is what material information we obtain if we could measure accurately Rayleigh waves propagating in any direction on the traction-free surface.

We first consider Rayleigh waves propagating along the traction-free surface of a homogeneous anisotropic elastic half-space. We present a first order perturbation formula for v_R, which expresses the shift of phase velocity of Rayleigh waves from the value pertaining to a comparative unstressed and isotropic state, caused by the perturbative anisotropic part of the elasticity tensor and by the initial stress.

Secondly we consider Rayleigh waves propagating along the traction-free surface of a vertically inhomogeneous anisotropic elastic half-space. We investigate the dispersion of v_R, i.e., derive a high-frequency asymptotic formula for v_R, which expresses the frequency-dependence of phase velocity of Rayleigh waves caused by the vertical inhomogeneity of the elasticity tensor and the initial stress. (Received September 08, 2009)