

Estimation of S-wave impedance in ground surface layer due to vertical load excitation

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Dynamic response of structures during earthquakes depends on physical parameters in the ground due to the dynamic soil-structure interaction. The influence is complicated, but it is known that elastic impedance of ground layer associates with the radiation damping.

Normalized Energy Density (NED; Goto et al., 2011a) is a physical quantity related to wave propagation in multi-layered ground, and it becomes a constant value through each layer independent of how layer structure is. That is, S-wave impedance is an important physical parameter to decide dynamic ground response.

We develop a method to estimate S-wave impedance in half space, and in the most upper surface layers based on numerical experiments.

Hiroyuki Goto, Sumio Sawada and Toshiyuki Hirai: Conserved quantity of elastic waves in multi-layered media: 2D SH case -Normalized Energy Density-, Wave Motion, 48, pp.602-612, 2011.