عنوان مقاله:

3D Topography Effects on Amplification of Plane Harmonic Body and Surface Waves

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خلاصه مقاله:

In this paper, three-dimensional scattering of plane harmonic SH, SV, P, and Rayleigh waves by surface topographies is investigated by using a boundary element method in frequency domain. It is shown that for exact evaluation of surface ground motions in topographies all efficient parameters such as geometry of the region, mechanical properties of the surrounding geological materials (density, Poisson's ratio, and shear modulus), wave type, azimuth and angle of incidence, as well as stimulation frequency must be taken into account altogether. Furthermore, the results emphasize the need for three-dimensional modeling of irregularities. Most of the topographies in the nature are composed from the simple shape. Based on this fact, four problems are considered in order to study the effects of the shape of the topography on the surface ground motion amplification. In order to assess the accuracy and efficiency of the proposed formulations for the computation of the surface displacement field amplification, several problems are considered. The investigated problems are hemispherical canyons, elliptical-shaped canyons, hemispherical hills and rectangular cube canyons.

کلمات کلیدی:

Boundary element method, Body and Surface Wave, wave propagation, Topographic Effect, Frequency Domain

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