Angular Rotation Assessment Method for Track Using Seismic Wavelength Originated from Surface Waves

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Since the differential displacement of a track which is caused by an earthquake influences the running safety of train strongly, it is important to consider the effects in designing railway structures seismically. In this paper, to obtain a proper seismic wavelength for assessment of differential displacement of track, the authors examined the characteristics of phase velocity which reflects the dispersion of Rayleigh wave, and proposed an empirical formula of calculating the wavelength based on the parameters of various real grounds. Moreover, the influence of the wavelength on the angular rotation assessment of viaducts was examined. As a result, it has been understood that the influence due to the characteristics of the ground G3 on the angular rotation assessment can be neglected, but the influence due to the characteristics of the ground G4 should be taken into account because of its obvious effect.