RESONANT RESPONSE SPECTRUM IN SEISMIC ANALYSIS OF STRUCTURES

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Abstract: This paper presents an analysis of the seismic loading of structures based on combined windows-wavelet transformation of ground accelerations which separates an acceleration function into harmonic waves of different periods and shows the intensity of each wave in an accelerogram. The function which represents the maximum intensity of acceleration for the observed wave in an accelerogram is named the resonant spectrum input. The response of the single degree of freedom system subjected to resonant spectrum input gives resonant response spectrum. The resonant response spectrum displays a similar behaviour as the classical acceleration spectrum, but with some specific behaviour, depending on a number of terms of the fluctuating component. In the case when the greater number of the fluctuating term is taken, the resonant acceleration spectrum gives more unfavourable response of the single degree of freedom system for the observed earthquake accelerogram with respect to the classical spectrum.

Keywords: Seismic loading, Windows-wavelet transformation, Resonant spectrum input, Resonant response spectrum.

MODELING OF STRUCTURES

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