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The determination of dynamic characteristics of the structure through wavelet transform

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The determination of dynamic characteristics of structures is one of the important parameters of strengthening and health of a structure. After determination of these parameters, one could obtain a precise viewpoint of performance of the structure. There are numerous methods to realize this objective that are increasingly developing to contribute to determination of associated parameters. The dynamic characteristics of a structure include frequency, mode shape and damping. In the present study, the determination of dynamic characteristics of a structure is done. First, the model is modeled in the software and tested under accelerometer. Then, the output data is received and the obtained data is analyzed to determine the dynamic characteristics of a structure through wavelet transform. The obtained dynamic parameters of wavelet transform are compared with the parameters of finite element application. Wavelet transform is a new way to determine the dynamic characteristics of a structure. To select the proper wavelet, one should obtain the main frequencies of the structure with proper accuracy. After selection of proper wavelet, this method could be generalized to three-dimensional structures and other special structures such as bridges, tunnels and industrial chimneys. After determining the dynamic characteristics of these structures at the beginning of its construction and a while later, one could estimate the damages that structure undergoes.

Biography

Sajad Hamedishahraki has completed his MSc in Civil Engineering from Azad University, Tehran, Iran in 2013. He is currently studying PhD in Civil Engineering from Azad University. He is working on projects about strength of steel structures by using low-yield or easy going steel that is in abbreviation is known as EGS 100 or Y.P 100, instead of commercial steel.

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