

عنوان مقاله:

Wavelet-Based Time-Domain Damage Localization in RC Beams

محل انتشار:

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خلاصه مقاله:

Identifying and evaluating damages on the structures during their useful lifetime is essential and has always been studied. This paper, focusing on the time series and the history of the vibration responses obtained from the modal test, damages have been investigated with different geometrical shapes and in various locations of reinforced concrete (RC) beams. For this purpose, after the development of ABAQUS software in modelling a laboratory sample of RC beams evaluated in previous research, two new damage index was proposed to identify the damages. Single artificial damages are implemented in the left, middle and right of numerical models of RC beams. All these damage indices' input was the acceleration of the degrees of freedom of RC beams samples in two damaged and undamaged states. The proposed damage indices in this study were calculated based on the area below the acceleration history diagrams and the maximum wavelet coefficient vector. In these indices, db_{10} from Daubechies wavelet family was selected and utilized. Results showed that using the damage index obtained from the area below the acceleration is not suitable. On the other hand, the damage indices from the maximum wavelet coefficient vector values could precisely identify damages.

کلمات کلیدی:

.Wavelet transform, Damage Detection, Time Domain, Dynamic Responses

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