

## عنوان مقاله:

Experimental Investigation of Damage Detection in Beam Using Dynamic Excitation System

## محل انتشار:

ژورنال مهندسی عمران، دوره 3، شماره 10 (سال: 1396)

تعداد صفحات اصل مقاله: 9

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## خلاصه مقاله:

Most structural failures are due to break in consisting materials. These breaks begin with a crack, the extension of which is a serious threat to the behaviour of structure. Thus the methods of distinguishing and showing cracks are the most important subjects being investigated. In this article, a new smart portable mechanical system to detect damage in beam structures via using fuzzy-genetic algorithm is introduced. Acceleration-time history of the three points of beam is obtained. The signals are then decomposed into smaller components using new EMD (Empirical Mode Decomposition) method with every IMF containing a specific range of frequency. The dominant frequencies of the structure are obtained from these IMFs using Short-term Fourier transform. Subsequently, a new method of damage detection in simply supported beams is introduced based on fuzzy-genetic algorithm. The new method is capable of identifying the location and intensity of the damage. This algorithm is developed to detect the location and intensity of the damage along the beam, which can detect the damage location and intensity based on the pattern of beam frequency variations between undamaged and damaged states.

## کلمات کلیدی:

Damage Detection; Dynamic System; EMD Method; Fuzzy-Genetic Algorithm

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/803957>

