Vibration analysis of cracked angle-beam structure by transfer matrix method

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ABSTRACT

This investigation presents a hybrid numerical/analytical method that permit the efficient dynamic vibration characteristics of angle beam structure with transverse open cracks for used Timoshenko theory. The method utilizes a numerical implementation of a transfer matrix solution to the equation of motion. The dimensions of the eigensolution matrix will not increase with an arbitrary finite number of the angles or cracks. Therefore can be calculated the eigenvalues (natural frequency or mode shapes) of this beam structure. In this article, besides the eigenvalue problem is solved by using transfer matrix method, simultaneously demonstrated of this beam structure by experiment method.

Keywords : Transfer Matrix, Eigenvalue, Euler-Bernoulli beam, Timoshenko beam, Mode Shape

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