عنوان مقاله:
Structural damage detection using Basis Pursuit

محل انتشار:
کنفرانس بین المللی عمران، معماری و توسعه پایدار شهری (سال: 1392)

تعداد صفحات اصل مقاله: 14

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خلاصه مقاله:

This paper presents a two stage method in detecting the location and extent of multiple structural damages using Basis Pursuit method. First, a system of equations is formed which relates the damage extents to the structural responses using the sensitivity matrix. This system is solved by a new spars recovery method using Basis Pursuit (BP). Thus, the damage extents and locations are approximately detected. Then, the first stage results are improved to the exact one using Newton-Raphson method. The efficiency of the proposed method is investigated by two numerical examples: a cantilever beam and a plan truss. The frequency responses are used to detect the damages of the cantilever beam and the plan truss. The paper also includes the verification of the proposed method using Monte Carlo simulation. The simulation results demonstrate the accuracy and efficiency of the proposed method in detecting multiple damage cases.

کلمات کلیدی:
Damage detection, Basis Pursuit, Monte Carlo, Newton Raphson

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