

## عنوان مقاله:

Free vibration analysis of functionally graded beams bonded with surface piezoelectric layers using state-space DQM

## محل انتشار:

دومین کنفرانس بین المللی آکوستیک و ارتعاشات (سال: 1391)

تعداد صفحات اصل مقاله: 8

## نویسندگان:

G.H. Rahimi - *Department of Mechanical Engineering, TarbiatModares University, Tehran, Iran*

H. Toorani

M.S Gazor

## خلاصه مقاله:

Using state-space based differential quadrature method, a two dimensional elasticity solution is pre-sented for free vibrations of functionally graded beams with integrated surface piezoelectric layers. The dif-ferential quadrature method is used for the axial direction and the state-space method for solving the problem in transverse direction. The boundary conditions considered here include simply supported-simply supported and clamped-clamped. The material properties are assumed to be graded in the thickness direction according to the exponential distribution and Poisson's ratio to be constant. The influences of gradient index, wave number, beam geometrical on the free vibration frequencies are studied. The present numerical results are compared with the results available from the literature which meet an excellent agreement. This comparison also clarifies the high accuracy as well as speed of convergence of the present scheme

## کلمات کلیدی:

Functionally graded beam; State space differential quadrature; Piezoelectric layers

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/188764>

