

عنوان مقاله:

New mathematical solution to free vibration of rectangular plates supported by an elastic foundation

محل انتشار:

چهارمین همایش بین المللی مهندسی سازه (سال: 1396)

تعداد صفحات اصل مقاله: 21

نویسنده:

GholamReza Havaei - Assistant Professor, Amirkabir University of Technology, Tehran, Iran

خلاصه مقاله:

This paper presents a new mathematical approach to analyze the free vibration of corner-supported rectangular plates which is supported fully or partially by an elastic foundation. A two-dimensional Fourier sine series along with cubic polynomial functions are used for displacement function of the plate to satisfy the governing differential equation as well as boundary conditions. The auxiliary polynomial functions of order three are picked out to fulfill the boundary conditions of this plate and to cope with the third-order discontinuity of derivative of the displacement function which appears when a two-dimensional Fourier series is considered lonely. Some numerical examples are presented to illustrate the efficiency and accuracy of the proposed method. The proposed solution can be easily extended to any arbitrary boundary support of the plate by exerting its corresponding equation

کلمات کلیدی:

Free vibration, corner-supported plates, partial elastic foundation, Fourier series, Auxiliary polynomial functions

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/879722>

