

عنوان مقاله:

Buckling Analysis of Spherical Composite Panels Reinforced by Carbon Nanotube

محل انتشار:

مجله مکانیک سازه های پیشرفته کامپوزیت، دوره 2، شماره 2 (سال: 1394)

تعداد صفحات اصل مقاله: 10

نویسندگان:

Saleh Pouresmaeeli - School of Mechanical Engineering, Shiraz University, Shiraz, Iran

S. Ahmad Fazelzadeh - School of Mechanical Engineering, Shiraz University, Shiraz, Iran

Esmaeal Ghavanloo - School of Mechanical Engineering, Shiraz University, Shiraz, Iran

خلاصه مقاله:

In this study, the buckling behavior of moderately thick Carbon Nano-Tube (CNT)-reinforced spherical composite panels subjected to both uniaxial and biaxial loads is examined. The uniform and various kinds of functionally graded distributions of the CNT are considered. The mechanical properties of the nanocomposite panels are estimated using the modified rule of mixture. Based on the first-order shear deformation theory and the von Karman-type of kinematic nonlinearity, the governing differential equations are derived and the solutions are determined using Galerkin's method. The suggested model is justified by a good agreement between the present results and those reported in the literature. The numerical results are performed to elucidate the influences of volume fraction, aspect ratio, thickness ratio and side-to-radius ratio on the critical buckling loads of the spherical nanocomposite panels. One of the main contributions of the current study is to investigate the effectiveness of functionally graded distributions. The effectiveness of functionally graded distributions with respect to various parameters are also investigated.

کلمات کلیدی:

Buckling, Carbon nanotube-reinforced, Nanocomposite, Spherical panel

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1026163>

