عنوان مقاله:

High-Order Free Vibration Analysis Of Thick Sandwich Panel with Foam Core Using Exponential And Third Order Shear Deformation Theory

محل انتشار:

هشتمین کنفرانس بین المللی مهندسی مکانیک، مواد و متالورژی (سال: 1401)

تعداد صفحات اصل مقاله: 21

نویسندگان:

Mehdi Keshavarzian - *Department of Mechanical Engineering,Technical and Vocational University (TVU),Hamedan, Iran.*

Reza Mohammadi - *Department of Mechanical Engineering, School of Engineering, Islamic Azad University. malayer, Iran*

Amin Feli. - *Department of Computer Engineering Technical and Vocational University (TVU), Hamedan, Iran*

Morteza Jafari. - *Department of Computer Engineering,Technical and Vocational University (TVU), Hamedan, Iran*

Saeid Kazemi - *Technical and Vocational University (TVU), Hamedan, Iran*

خلاصه مقاله:

This study deals with free vibration analysis of composite sandwich panel via multi-layer face sheets with a flexible core based on higher-order sandwich panel theory. For the first time, the effects of foam core on the natural frequencies of a rectangular plate with the composite layers have been compared. The formulation used the exponential and third-order shear deformation theory for composite face sheets and polynomial description for the displacement field in the core layer which was based on the displacement field of Frostig's second model. The governing equations and the boundary conditions are derived by Hamilton’s principle. Transverse shear and rotary inertia effects of face sheets are also taken into consideration. Numerical results are presented and compared with the experimental and theoretical results found in the literature. The damping effects of the sandwich plate system can be controlled and changed when different magnetic field strengths are applied

کلمات کلیدی:

Foam core; Hamilton’s principle; higher-order sandwich panel theory ;free vibration