Abstract

In this work the dynamic behavior of a geodesic dome in aluminum alloy is analyzed through numerical models obtained by the Finite Element Method and tests carried out in the laboratory. It was noted that the numerical and experimental results have large differences. Dynamic tests were performed using impulse excitation (impact hammer) and sweep frequency through harmonic excitation (mini-shaker) to identify the natural frequencies of the structure. Using the Theory of Fourier and Wavelet Transform, it was possible to visualize different dynamic behavior of joints. Possible causes for the differences involve the type of joint, the fixing of the elements in the joints, the profile adopted for the elements and boundary conditions for the numerical model.

Index Terms

Computer Science  Applied Sciences

Keywords

Geodesic dome, vibrations, Wavelet, Fourier transform.