VIBRO-ACOUSTIC ANALYSIS OF AN ENCLOSURE BOUNDED BY A FLEXIBLE PANEL: EFFECT OF THE BOUNDARY CONDITION

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TÓM TẮT:

The vibro-acoustic analysis of a panel-enclosure coupled system which consists of an enclosure with a clamped panel is investigated and compared with that of a simply supported one. The flexible wall on the enclosure is directly driven by the plane wave outside enclosure with different elevation angles, and the sound field in the enclosure is driven through the coupling with flexible wall. The response of coupled systems is obtained by the classical modal coupling method. In this analysis, the effect of incident angle of the plane wave which acts on the panel surface upon the response of two coupled systems are compared with each other. The results show that significant discrepancies between the two different boundary conditions are demonstrated in terms of several factors plot as frequency, including the noise reduction quantity, the panel vibration velocity distribution. It is found that panel modes which mode indices include even number are driven as the elevation angle of plane wave is increased.