Diffuse field loading of space structures - modeling and test

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ABSTRACT

This paper presents a comparison of different modeling approaches for honeycomb panel structures and a simplified satellite box. The problem at hand is the prediction of the response of these structures to a diffuse acoustic field. The structure is modeled with both a finite element method (FE) and a statistical energy analysis (SEA) approach. The surrounding acoustic fluid is modeled with boundary element analysis (BEM) and SEA. The following coupled models are considered: FE-BEM, Hybrid FE-SEA, and SEA. The predicted results are compared to experimental data. While all of the methods have their role, showing the comparing the methods across a broad frequency range provides insight into the strengths and weakness of the different methods.

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