On the use of a variational technique based on integral equations for plane acoustic and vibro-acoustic problems

Problems such as sound insulation and absorption of plane structures in laboratory conditions can theoretically be described as an integral or integral-differential equation. This equation contains the Green’s function integrated over the surface, which describes the radiation from the surface. A variational technique, well described by Morse and Ingard, has successfully been used for both absorption and sound insulation for a plane incident wave. The resulting formulas are surprisingly simple, accurate and robust. Moreover, they capture the physics of sound radiation of a finite surface well. However, the approach has turned out problematic in more complicated cases, including spatial periodicity. The paper discusses these issues, and suggests modifications to overcome the problems.

General information
Publication status: Published
Organisations: Department of Electrical Engineering, Acoustic Technology
Contributors: Brunskog, J., Richard, A. P. A.
Number of pages: 8
Publication date: 2016

Host publication information
Title of host publication: Proceedings of Inter-noise
Editor: Kropp, W.
ISBN (Electronic): 978-3-939296-11-9
Keywords: Vibro-Acoustics, Transmission, Absorption
Source: PublicationPreSubmission
Source-ID: 125669713
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2016 › Research › peer-review