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Integral equation to predict Frequency Averaged Quadratic Pressure radiated from a vibrating structure

Jean - Louis Guyader
Laboratoire Vibrations –Acoustique
I.N.S.A. de Lyon
25 bis avenue Jean Capelle
69621 Villeurbanne, France
Phone=33 4 72 43 80 80
Fax=33 4 72 43 87 12
email=guyader@lva.insa-lyon.fr

The calculation of the radiated pressure with the classical integral method is in general difficult especially at medium and high frequencies when the wave length is small and necessitate long calculation to have convergence of the method . In addition , contrary to low frequency behaviour, the radiation phenomenon is no more deterministic and the radiated pressure can strongly vary when an experiment of sound radiation is repeated . The prediction of Frequency Averaged Quadratic Pressure (FAQP) proposed in reference [1], in the case of a baffled plates allows one to describe radiated pressure in average, resulting in a robust method predicting basic tendencies. In the paper the FAQP method is extended to the general radiation problem, this necessitate some assumptions that are presented and discussed .Applications will be presented to establish the limit of validity of the formulation.

[1] The frequency averaged quadratic pressure Acta -Acoustica,86.pp1021-1027,2000.