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Letter to the Editor

Comments on "Sound absorption characteristics of air-gap systems in enclosed cavities"

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Ref. [1] purports to concern sound *absorption* (i.e., dissipation of sound energy into heat) but no account is taken of the damping of the panels in the theoretical model, in the specification of the experimental system or in the discussion of experimental results (although Fig. 1(b) would suggest otherwise) Since 'absorption' can be produced only by dissipative actions in the panels (the air may be considered to be lossless), I find this omission inexplicable. It seems therefore that the function of the proposed system is essentially to act as a 'dynamic neutralizer' or 'detuner' and not as a sound 'absorber'. I therefore consider the title of the paper to be misleading.

In the design optimization of secondary resonant systems acting as dynamic neutralizer, the choice of damping is crucial, as illustrated by Fahy and Schofield [2] in an analysis of a system in which a Helmholtz resonator is connected to a small room in order to suppress low order acoustic resonances of the room. The authors of this letter have apparently not attempted to explore the influence of panel damping on the performance of the system; and, since their model lacks a damping element, they offer no practical guidance to readers wishing to exploit the proposed resonance control system.

It is also strange that the authors present no comparison between experimentally observed and theoretically predicted performance.

References

[1] S.W. Kang, J.M. Lee, Sound absorption characteristics of air-gap systems in enclosed cavities, *Journal of Sound and Vibration* 259 (2003) 209–218.

[2] F.J. Fahy, C. Schofield, A note on the interaction between a Helmholtz resonator and an acoustic mode of an enclosure, *Journal of Sound and Vibration* 72 (1980) 365–378.

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