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Corrigendum

Corrigendum to "Sound transmission into an axisymmetric enclosure" [J. Sound Vib. 287 (2005) 45–75]

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Formula (38) contains an error (factor 2). We propose to replace it with[1]

$$\int_S (1-\mathrm{e}^{R_e(S/V\zeta)|x-y|})\left(\frac{\partial}{\partial n_y}-\frac{\mathrm{i}k}{\zeta}\right)\left(\frac{\mathrm{e}^{\mathrm{i}k|x-y|}}{4\pi|x-y|}\right)p^i(y,k)\,\mathrm{d}S(y)$$
$$\underset{k}{=}\int_S \frac{\mathrm{e}^{\mathrm{i}k|x-y|}}{4\pi|x-y|}\rho\omega^2(u(y,k),n_y)\,\mathrm{d}S(y)+\vartheta\left(\frac{1}{\zeta}\right) \tag{1}$$

which not only corrects the mistake but also takes into account the possible resonances of the structure excitation.

We also take the opportunity of indicating that the use of 2D stationary-phase (α,β) permits to generalize, for any point inside a cavity of whatever form, the formula (64) with[2]

$$p^i(x,k,\zeta,\varepsilon)=\int_S (1-\mathrm{e}^{-S/V\zeta|x-y(\alpha,\beta)|})^{-1}$$
$$\times\frac{\mathrm{e}^{\mathrm{i}k|x-y(\alpha,\beta)|}}{4\pi|x-y(\alpha,\beta)|}\rho\omega^2(U(y(\alpha,\beta),k,\varepsilon),n_{y(\alpha,\beta)})\,\mathrm{d}\mu(y(\alpha,\beta)) \tag{2}$$

and formula (78), for the fluid–structure coupling of any modes, with[3]

$$Z_{mq}(k,\zeta)=-\mathrm{i}\omega\rho c\int_S \frac{M^{-1}(\alpha,\beta)}{\zeta}(\Phi_m(y(\alpha,\beta)),n_{y(\alpha,\beta)})$$
$$\times(\Phi_q(y(\alpha,\beta)),n_{y(\alpha,\beta)})\mu(\alpha,\beta)\,\mathrm{d}\alpha\,\mathrm{d}\beta. \tag{3}$$

These formulas allow to completely resolve the problem of the transmission of the sound inside an elastic enclosure of whatever form S provided its eigenmodes Φ_m in vacuo are known. Axisymmetric cavities with or without rigid bottoms are simply specific cases.

A more detailed 16-page explanation of the corrections is available from the author at the address above.

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[1]Corresponds to formula (96) of 16-page explanation paper.
[2]Corresponds to formula (99) of 16-page explanation paper.
[3]Corresponds to formula (105) of 16-page explanation paper.

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