Corrigendum to the paper by

D. H. Keuning: Exact Resonant Frequencies for the Thickness-Twist Trapped Energy Mode in a Piezoceramic Plate, *Journal of Engineering Mathematics*, Vol. 6 (1972) No. 2, 143–154

In the above-mentioned paper an asymptotic behaviour of the quotient

$$(\Omega_r - \Omega_e)/(\Omega_u - \Omega_e) \tag{1}$$

for large values of the dimensionless thickness t was assumed yielding a limit, dependent of the coupling factor and smaller than 1 as $t \to \infty$. In this note the assumed behaviour is corrected and it is shown that expression (1) tends to 1 for $t \to \infty$ in accordance with the results given in [1].

Interchanging orders of integration in (4.1) we obtain

$$\int_{-1}^{1} W(t^{-1}|x-\rho|)\, G(\rho)d\rho = 0, \quad -1 \leqslant x \leqslant 1 \tag{2}$$

where ([6])

$$W(s) = \sum_{n=0}^{\infty} \left[\frac{\exp\{-(n+\tfrac{1}{2})\pi s\}}{n+\tfrac{1}{2}} - k^2 \frac{\exp\left[-\pi s\{(n+\tfrac{1}{2})^2 - (\Omega/\pi)^2\}^{\frac{1}{2}}\right]}{\{(n+\tfrac{1}{2})^2 - (\Omega/\pi)^2\}^{\frac{1}{2}}} \right] \tag{3}$$

$W(s)$ has the expansion

$$W(s) = -(1-k^2)\log\frac{\pi s}{4} - k^2 A + O(s) \tag{4}$$

for $s \to 0$. A is a function of Ω,

$$A = \sum_{n=0}^{\infty} \left[\frac{1}{\{(n+\tfrac{1}{2})^2 - (\Omega/\pi)^2\}^{\frac{1}{2}}} - \frac{1}{n+\tfrac{1}{2}} \right] \tag{5}$$

Substituting (4) into (2) and neglecting the order term, we obtain

$$\int_{-1}^{1} \left[\log|x-\rho| - \log\left(\frac{4t}{\pi}\right) + \frac{k^2}{1-k^2} A(\Omega) \right] G(\rho)d\rho = 0, \quad -1 \leqslant x \leqslant 1. \tag{6}$$

Differentiation of (5) with respect to x yields a singular integral equation with the solution

$$G(\rho) = C(1-\rho^2)^{-\frac{1}{2}} \tag{7}$$

in accordance with the numerical results. C is an arbitrary constant. Substitution of (7) into (6) yields a transcendental equation with the solution $\Omega = \tfrac{1}{2}\pi$ for $t \to \infty$. Hence (1) tends to 1. Further computations show that the solution of (6) for expression (1) is in accordance with table I for $t = 100$. The figures 3 and 4 must be corrected for $0 \leqslant t^{-1} < 0.01$ only.

Acknowledgement

REFERENCES

[1] D. H. Keuning, Exact Equations for Analysing Thickness-Twist Trapped-Energy Modes in Monolithic Filters, to be published in *Journal of Engineering Mathematics*, vol. 7, 1973.