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LETTERS TO THE EDITOR

COMMENTS ON "THE POINT-MATCHING METHOD ON DISSIPATIVE SILENCERS OF ARBITRARY CROSS-SECTION"

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The author is to be congratulated for his straightforward solution of this important technical problem [1]. It is also the prupose of this discussion to bring the attention of the interested reader to additional references regarding use of the point-matching method in vibrations and acoustics problems.

H. D. Conway employed the methodology when dealing with field and eigenvalue problems within the realm of the classical theory of plates [2, 3]. It is important to point out that the governing partial differential equation of a vibrating plate is

$$\nabla^4 W - \frac{\rho h}{D}\omega^2 W = 0 \tag{1}$$

in the case of normal modes of vibration.

However, when dealing with a simply supported polygonal plate, the governing differential system reduces to [2, 3]

$$\nabla^2\psi + \sqrt{\rho h/D}\omega\psi = 0, \qquad \psi = 0 \text{ on the boundary.} \tag{2a, b}$$

Equation (2a) is the well known Helmholtz equation, which also appears in acoustical and electromagnetic waveguide theory. In this case, the problem corresponds to a "soft" acoustical waveguide or to the propagation of TM modes in electromagnetic waveguide theory.

When Drs Yee and Audeh published their now well known paper [4], the first writer published a discussion [5] pointing out related and previous publications in the applied mechanics field [2, 3, 6, 7], where the point-matching or collocation method had already been employed when determining eigenvalues in waveguide type problems. Regarding applications of the conformal mapping method in many waveguide problems, the reader is referred to reference [8].

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