Errata: "Initial Temperature and Pressure Effects on Composite Solid Propellant Burning Rates: Comparisons with Theory"

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IN Table 1 the column under the heading Best Fit $N = 0.585$ should refer to laws of the class $P/r = a + bP^N$, *not* to laws of the class $P/r = a + brP^N$. The same holds for the columns under the headings Best Fit $N = 0.605$, 0.605, 0.86 in Tables 2, 3, and 4, respectively. Additionally, the Best Fit $N = 0.605$ in Table 3 should read Best Fit $N = 0.62$.

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Errata: "Structural Synthesis of Thin, Cylindrical Shells with Spiral-Type Stiffeners"

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DURING the course of further investigations into the use of approximating polynomials to reduce the computational effort required for the treatment of skew plate buckling problems, it was found that the basic equation used to generate Eq. (2) of Ref. 1 was in error. In particular, the reported "correction" of Eq. (34) of Ref. 8 of the paper is invalid. Equation (34) is correct as it stands.

A new skew plate buckling interaction expression has therefore been developed. This new expression is given in terms of oblique coordinates.[2] Such a coordinate system requires significantly fewer terms in an approximating polynomial of a given accuracy than the previously used orthogonal system. Buckling load values used to generate this new interaction expression were calculated from equations given by Durvasula and Nair in Ref. 2. The new expression is

$$\bar{N}_x = 1 - \bar{N}_y + 1.117\psi^2 + 0.9499\psi^4 + 0.5117\psi^6 - \bar{N}_{xy}(1.045\psi + 0.5676\psi^3 - 0.2989\psi^5 + 0.1262\psi^7) - \bar{N}_{xy}^2(0.1832 - 0.1161\psi^4) \quad (1)$$

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where $\bar{N}_x$, $\bar{N}_y$, and $\bar{N}_{xy}$ are calculated by replacing σ_x, σ_y, and σ_{xy} of the paper by

$$\sigma_{x'} = \sigma_{y'} = N_y \sec\psi/[D_1 + D_2D_3D_4(1 + \sin^2\psi)]$$
$$\sigma_{x'y'} = (N_{xy} - N_y \tan\psi)/D_1 \quad (2)$$

respectively. This expression yields results that agree with those produced by computing $\bar{N}_x$ from the lowest eigenvalue of Eq. (20) of Ref. 2, using $N = M = 6$, to within 5% or 0.05, whichever error is greater, for all $\bar{N}_y$, $-60° \leq \psi \leq 60°$ and $-2 \leq \bar{N}_{xy} \leq 2$.

The design studies reported in Table 1 were repeated using this new interaction expression. It should be noted that the entries in the second column of this Table relating to the loading conditions for studies 3 and 4 are inverted and should read 0, −15, respectively. The local optima reported in the Table were essentially unaffected for all studies. This is not unexpected. In the case of studies 1 and 2 the original interaction expression is reasonably accurate in the range $40° \leq D_5 \leq 50°$ for the loading conditions used. In studies 3 and 4 a local skin buckling constraint was used only to show that the design algorithm would move toward a ring-stiffened design, where such a constraint is not applicable. This condition was confirmed with the new expression.

The presence of several local optima for design study 1 was also confirmed. Two new optima were located, one with $\bar{t} = 0.0422$, $D_5 = 62.4°$, and the other, $\bar{t} = 0.0443$, $D_5 = 28.3°$. In the case of study 2 a series of local optima of similar weight but of varying design and helix angle were located. These designs ($\bar{t} = 0.168$, $D_5 = 52.3°$, $\bar{t} = 0.16$:, $D_5 = 46.6°$, and $\bar{t} = 0.160$, $D_5 = 33.2°$ are typical) are superior to that presented in Table 1 and are comparable in weight to optimum conventionally stiffened shells.

References

[1] Pappas, M. and Amba-Rao, C. L., "Structural Synthesis of Thin, Cylindrical Shells with Spiral-Type Stiffeners," *AIAA Journal*, Vol. 8, No. 8, Aug. 1970, pp. 1529–1530.

[2] Durvasula, S. and Nair, E. S., "Buckling of Simply Supported Skew Plates," *Israel Journal of Technology*, Vol. 7, No. 4, 1969, pp. 303–311.

Errata: "Vibrations of Pressurized Orthotropic Cylindrical Membranes"

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1) THERE should be a (−) minus sign preceding the terms on the right-hand side of Eq. (10).
2) The inertia term in the second of Eqs. (19) should read $\partial^2\bar{v}/\partial\tau^2$.
3) The (1,2) and (2,1) terms in the matrix Eq. (23) should read $(\alpha + \gamma)n\lambda$.
4) The coefficient of the $n^2\lambda^2$ term in the denominator of Eq. (24) should read $[(\beta - \alpha^2)/\gamma - 2\alpha]$.

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