

Erratum

Erratum to “Design of a polynomially inhomogeneous bar with a tip mass for specified mode shape and natural frequency” [Journal of Sound and Vibration, 287 (4–5) (2005) 1004–1012]

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Eq. (39) pertains to case $\alpha = 3$. In the paper, unfortunately, this equation was utilized also for cases $\alpha \neq 3$. Hence corrections are needed. For the general case Eq. (39) should be replaced by the following:

$$D_j(\xi) = b_2 \left(\xi^2 + g_j \xi - \frac{g_j^2}{2} \right) \quad (j = 1, 2, 3), \quad (39)$$

obtainable by inserting Eqs. (25) and (28) into Eq. (15) and utilizing Eq. (19) to express α in terms of g . Eqs. (40)–(42) should be replaced by the following ones, respectively,

$$D_1(\xi) = (\xi^2 - 3.697700100\xi - 6.836493015)b_2, \quad (40)$$

$$D_2(\xi) = (\xi^2 - 0.9341807585\xi - 0.4363468448)b_2, \quad (41)$$

$$D_3(\xi) = (\xi^2 + 4.631880858\xi - 10.72716014)b_2. \quad (42)$$

Figs. 1, 2, 4 and 5 should be replaced by the ones presented here. Fig. 3, based upon Eq. (39) is correct. The correct versions of Eqs. (43)–(45) of the paper should read, respectively,

$$D_1(\xi) = (\xi^2 - 4.931789495\xi - 12.16127381)b_2, \quad (43)$$

$$D_2(\xi) = (\xi^2 - 0.9631122932\xi - 0.4637926446)b_2, \quad (44)$$

$$D_3(\xi) = (\xi^2 + 5.894901788\xi - 17.37493354)b_2. \quad (45)$$

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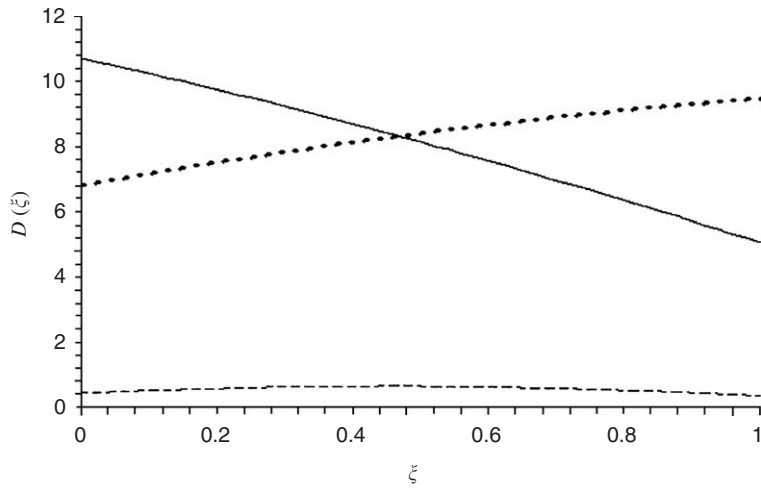


Fig. 1. Variation of flexural rigidity $D(\xi)$ vs. non-dimensional axial coordinate ξ for $\alpha = 1$: $D_1(\xi)$ (—), $D_2(\xi)$ (- - -), $D_3(\xi)$ (.....).

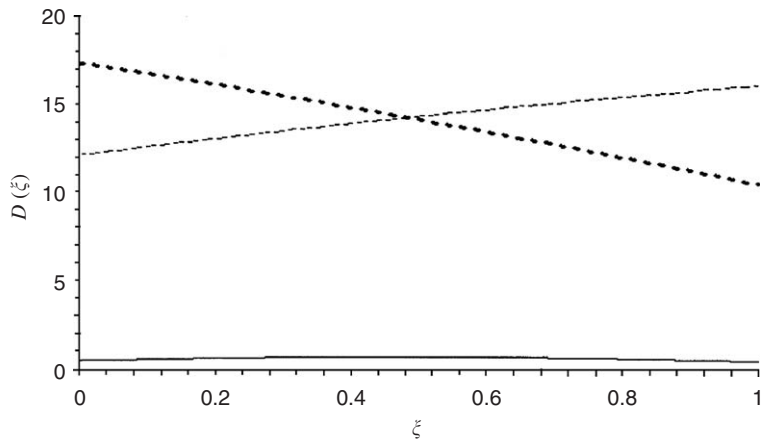


Fig. 2. Variation of flexural rigidity $D(\xi)$ vs. non-dimensional axial coordinate ξ for $\alpha = 2$: $D_1(\xi)$ (—), $D_2(\xi)$ (- - -), $D_3(\xi)$ (.....).

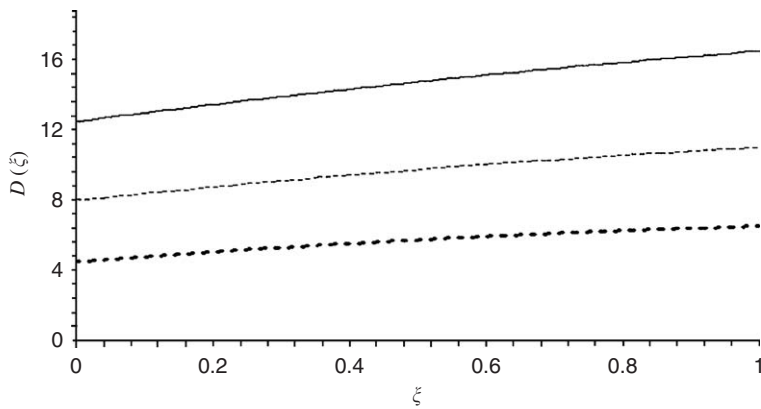


Fig. 4. Variation of flexural rigidity $D(\xi)$ vs. non-dimensional axial coordinate ξ for the mass ratio: —, $g^* = -3$; - - -, $g^* = -4$;, $g^* = -5$.

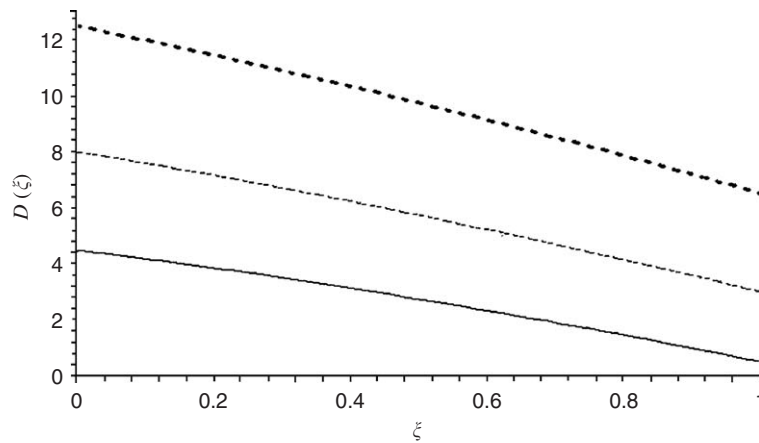


Fig. 5. Variation of flexural rigidity $D(\xi)$ vs. non-dimensional axial coordinate ξ for the mass ratio:—, $g^* = 3$; - - -, $g^* = 4$;, $g^* = 5$.

Eqs. (50)–(52) should read, respectively,

$$D(\xi) = 9/2 + 3\xi - \xi^2 \quad \text{for } g^* = -3, \quad (50)$$

$$D(\xi) = 8 + 4\xi - \xi^2 \quad \text{for } g^* = -4, \quad (51)$$

$$D(\xi) = 25/2 + 5\xi - \xi^2 \quad \text{for } g^* = -5. \quad (52)$$

Likewise, Eqs. (53)–(55) should be replaced

$$D(\xi) = 9/2 - 3\xi - \xi^2 \quad \text{for } g^* = -3, \quad (53)$$

$$D(\xi) = 8 - 4\xi - \xi^2 \quad \text{for } g^* = -4, \quad (54)$$

$$D(\xi) = 25/2 - 5\xi - \xi^2 \quad \text{for } g^* = -5. \quad (55)$$

In Eqs. (10), $u(x)$ should be replaced by $u(x, t)$. In Eq. (17) the terms $+b_1 ML\omega^2$ should be replaced by $-b_1 ML\omega^2$. In Eqs. (18), (19), (21) and (27) the term ρ ought to be replaced by ρA .

The first sentence of the Abstract should read “In this study the closed form solution is obtained, apparently for the first time, for the free vibration of an inhomogeneous bar with a tip mass.” The first two sentences of the Introduction should read: “Free longitudinal vibration of bars were studied in number of papers. Various complicating effects were investigated by Gürgöze and Ynceoglu [1], Li, Wu and Xu [2], and Li [3–4].”

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