ASME Journal of Applied Mechanics
Online journal at:
https://asmedigitalcollection.asme.org/appliedmechanics

Erratum: "On the Analysis of Periodically Heterogenous Beams" [ASME J. Appl. Mech., 2016, 83(9), p. 091001; DOI: 10.1115/1.4033721]

Yanze Xiao, Shilei Han, and Olivier A. Bauchau

This erratum corrects errors in the originally published paper.

The equations listed in the original manuscript have been found to include several typographical errors that make it impossible to understand the proofs presented in the paper. In Eq. (18), appearing on page 4, matrix $\mathbf{M}$ should read

$$\mathbf{M} = \begin{bmatrix} \boldsymbol{\Psi} & \mathbf{O} \\ \mathbf{O} & \mathbf{O}_{6\times 6} \end{bmatrix}$$

Similarly, matrix $\mathbf{N}$ defined in Eq. (19) should be

$$\mathbf{N} = \begin{bmatrix} \mathbf{Z}\boldsymbol{\alpha} \\ \mathbf{C}_r^{-1}\boldsymbol{\alpha} - \boldsymbol{\alpha}\mathbf{C}_r^{-1} \end{bmatrix}$$

With these two corrections, identity (17) is proved easily

$$\mathbf{M}\mathbf{N}\mathbf{C}_r^{-1}\mathbf{C}_r^{-1} + \mathbf{G}\mathbf{N}\mathbf{C}_r^{-1} + \mathbf{E}\mathbf{N} = \begin{bmatrix} \boldsymbol{\Gamma}\mathbf{Z}\boldsymbol{\alpha}\mathbf{C}_r^{-1} + \boldsymbol{\Psi}\mathbf{Z}\mathbf{C}_r^{-1}\boldsymbol{\alpha}\mathbf{C}_r^{-1} + \boldsymbol{\Psi}^T\mathbf{Z}\boldsymbol{\alpha} + \boldsymbol{\Theta}\mathbf{Z}\mathbf{C}_r^{-1}\boldsymbol{\alpha} \\ \mathbf{Z}^T\boldsymbol{\Psi}^T\mathbf{Z}\boldsymbol{\alpha} + \mathbf{Z}^T\boldsymbol{\Theta}\mathbf{Z}\mathbf{C}_r^{-1}\boldsymbol{\alpha} \end{bmatrix} = \mathbf{O} \tag{1}$$

where negative and positive terms cancel out to yield the first equality and identities (16*a*) and (16*b*) are introduced to yield the second equality.

In Eq. (30) appearing on page 5, null space matrix $\mathbf{V}$ should read

$$\mathbf{V} = \begin{bmatrix} \mathbf{Z}\boldsymbol{\alpha} \\ -\boldsymbol{\alpha} + \mathbf{C}_r^{-1}\boldsymbol{\alpha}\mathbf{C}_r^{-T} \end{bmatrix}$$

Consequently, the general solutions of Eq. (32) take the forms given in Eqs. (34*a*) and (34*b*).

Finally, Eq. (32) appearing on page 5 and resulting from Eq. (28) should be

$$\mathbf{M}\,\mathbf{X}^{\flat}\hat{\mathbf{C}}^{-T}\hat{\mathbf{C}}^{-T} + \mathbf{G}\,\mathbf{X}^{\flat}\hat{\mathbf{C}}^{-T} + \mathbf{E}\,\mathbf{X}^{\flat} = \check{\mathbf{I}}^{\flat}$$

