J Elast (2016) 122:41–42
DOI 10.1007/s10659-015-9556-z

ERRATUM

Erratum to: On the Determination of a Peridynamic Constant in a Linear Constitutive Model

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Published online: 18 November 2015

Erratum to: J. Elast. (2015)
DOI 10.1007/s10659-015-9531-8

This erratum concerns a correction in the expression (42) of the original article. As a consequence, the text between this expression and the expression (47) in that article was revised and is presented below.

$$\widehat{\Omega}_{\mathbf{x}_0}[\underline{\mathbf{h}}_d] = \frac{\beta^2 m m_6}{15}. \tag{42}$$

Substituting both (40.a) and (42) into (37), we find that

$$\alpha_{33} = \frac{20\mu}{m^2} = \frac{4\widetilde{\alpha}}{3m}, \tag{43}$$

where $\widetilde{\alpha}$ is the peridynamic constant that appears in (22) and is given by (34.a). Substituting (43) into (33) and using (32) together with (25) and (20), we get

$$\widehat{\alpha}_{11} = \frac{5\mu}{m^2} = \frac{\widetilde{\alpha}}{3m}, \qquad \alpha_{12} = \frac{1}{2m^2}(9\kappa - 5\mu). \tag{44}$$

Next, recall from above that (25) holds and substitute α_{33}, given by (43), and both $\widehat{\alpha}_{11}$ and α_{12}, given by (44), into the expressions (14), (15), and (16), to obtain

$$\widehat{W}_{\mathbf{x}_0}[\underline{\varphi}\mathbf{e}] = \frac{1}{2}\left[\kappa\widetilde{\vartheta}[\underline{\varphi}\mathbf{e}]^2 + \frac{5\mu}{m}\int_{\mathcal{N}_\delta}\widetilde{\omega}(|\boldsymbol{\xi}|)|\boldsymbol{\xi}|^2\left(\underline{\varphi}\langle\boldsymbol{\xi}\rangle - \frac{\widetilde{\vartheta}[\underline{\varphi}\mathbf{e}]}{3}\right)^2 dv_{\boldsymbol{\xi}}\right], \tag{45}$$

The online version of the original article can be found under doi:10.1007/s10659-015-9531-8.

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$$\widehat{W}_{\mathbf{x}_0}[\underline{\mathbf{h}}_d] = \frac{5\mu}{m^2}\int_{\mathcal{N}_\delta} \omega\big(|\boldsymbol{\xi}|\big)|\boldsymbol{\xi}|^2 \underline{\mathbf{h}}_d\langle\boldsymbol{\xi}\rangle \cdot \int_{\mathcal{N}_\delta} \frac{\omega(|\boldsymbol{\eta}|)|\boldsymbol{\eta}|^2}{(\sin\alpha)^2}$$
$$\times \big[\underline{\mathbf{e}}\langle\boldsymbol{\eta}\rangle \cdot \underline{\mathbf{h}}_d\langle\boldsymbol{\xi}\rangle + \underline{\mathbf{e}}\langle\boldsymbol{\xi}\rangle \cdot \underline{\mathbf{h}}_d\langle\boldsymbol{\eta}\rangle\big]\underline{\mathbf{e}}\langle\boldsymbol{\eta}\rangle dv_\eta dv_\xi, \tag{46}$$

$$\widetilde{\underline{\mathbf{L}}}_{\mathbf{x}_0}[\underline{\mathbf{h}}]\langle\boldsymbol{\xi}\rangle = \widetilde{\omega}\big(|\boldsymbol{\xi}|\big)|\boldsymbol{\xi}|\bigg\{\bigg[\bigg(\kappa - \frac{5\mu}{3^2}\bigg)\frac{3}{m}\widetilde{\vartheta}[\underline{\varphi}\underline{\mathbf{e}}] + \frac{5\mu}{m}\underline{\varphi}\langle\boldsymbol{\xi}\rangle\bigg]\underline{\mathbf{e}}\langle\boldsymbol{\xi}\rangle$$
$$+ \frac{10\mu}{m^2}\int_{\mathcal{N}_\delta} \frac{\widetilde{\omega}(|\boldsymbol{\eta}|)|\boldsymbol{\eta}|^2}{\sin\alpha}\big(\underline{\mathbf{e}}\langle\boldsymbol{\eta}\rangle \cdot \underline{\mathbf{h}}_d\langle\boldsymbol{\xi}\rangle + \underline{\mathbf{e}}\langle\boldsymbol{\xi}\rangle \cdot \underline{\mathbf{h}}_d\langle\boldsymbol{\eta}\rangle\big)\underline{\underline{\mathbf{e}}}\langle\boldsymbol{\xi},\boldsymbol{\eta}\rangle dv_\eta$$
$$+ \frac{\widehat{\alpha}_{13}}{2}\int_{\mathcal{N}_\delta} \widetilde{\omega}\big(|\boldsymbol{\eta}|\big)|\boldsymbol{\eta}|^2\bigg[\big(\underline{\varphi}\langle\boldsymbol{\xi}\rangle + \underline{\varphi}\langle\boldsymbol{\eta}\rangle\big)\underline{\underline{\mathbf{e}}}\langle\boldsymbol{\xi},\boldsymbol{\eta}\rangle$$
$$+ \frac{1}{\sin\alpha}\big(\underline{\mathbf{e}}\langle\boldsymbol{\eta}\rangle \cdot \underline{\mathbf{h}}_d\langle\boldsymbol{\xi}\rangle + \underline{\mathbf{e}}\langle\boldsymbol{\xi}\rangle \cdot \underline{\mathbf{h}}_d\langle\boldsymbol{\eta}\rangle\big)\underline{\mathbf{e}}\langle\boldsymbol{\xi}\rangle\bigg]dv_\eta\bigg\}, \tag{47}$$

where m and $\widetilde{\vartheta}[\cdot]$ are given by (20) and (21.b), respectively.

Comparing (22) with (45) and using (43) to obtain $5\mu/m = \widetilde{\alpha}/3$, we see that both expressions differ by a factor of $1/3$ multiplying $\widetilde{\alpha}$.

Acknowledgement The author is grateful to his student Maurício Pereira for calling his attention to the error in the expression (42) in the original article.