Continuum Mech. Thermodyn. (2022) 34:885–886
https://doi.org/10.1007/s00161-021-01070-8

CORRECTION

Xu Wang · Peter Schiavone

Correction to: Coulomb force on a line charge in an anisotropic piezoelectric biomaterial

Published online: 9 December 2021

Correction to: Continuum Mech. Thermodyn.
https://doi.org/10.1007/s00161-021-01061-9

In Eqs. (18), (20), (23), (24), (26) and (27), "$\mathbf{I}_4$" should be replaced by "$\mathbf{i}_4$" where $\mathbf{i}_4 = [0\ 0\ 0\ 1]^T$. The correct expressions for Eqs. (18), (20), (23), (24), (26) and (27) are then:

$$\mathbf{f}_1(z) = -\frac{q}{2\pi \mathrm{i}} \langle \ln(z_\alpha - p_\alpha d) \rangle \mathbf{A}_1^T \mathbf{i}_4 - \frac{q}{2\pi \mathrm{i}} \sum_{j=1}^{4} \left\langle \ln(z_\alpha - \bar{p}_j d) \right\rangle \mathbf{K} \mathbf{I}_j \bar{\mathbf{A}}_1^T \mathbf{i}_4, \tag{18}$$

$$\begin{aligned} F &= q E_2^C(0, d) \\ &= \frac{q^2}{\pi d} \mathbf{i}_4^T \operatorname{Im} \left\{ \mathbf{A}_1 \sum_{j=1}^{4} \left\langle \frac{p_\alpha}{p_\alpha - \bar{p}_j} \right\rangle \mathbf{K} \mathbf{I}_j \bar{\mathbf{A}}_1^T \right\} \mathbf{i}_4 \\ &= \frac{q^2}{\pi d} \mathbf{i}_4^T \operatorname{Im} \left\{ \sum_{j=1}^{4} \sum_{k=1}^{4} \frac{p_k}{p_k - \bar{p}_j} \mathbf{A}_1 \mathbf{I}_k \mathbf{K} \mathbf{I}_j \bar{\mathbf{A}}_1^T \right\} \mathbf{i}_4, \end{aligned} \tag{20}$$

$$\begin{aligned} F = &\frac{q^2}{2\pi d} \mathbf{i}_4^T \operatorname{Re} \left\{ \sum_{j=1}^{4} \sum_{k=1}^{4} \frac{p_k}{p_k - \bar{p}_j} (\mathbf{A}_1 \mathbf{I}_k \mathbf{A}_1^{-1}) \mathbf{H}_1 (\bar{\mathbf{A}}_1 \mathbf{I}_j \bar{\mathbf{A}}_1^{-1})^T \right\} \mathbf{i}_4 \\ &- \frac{q^2}{\pi d} \mathbf{i}_4^T \operatorname{Re} \left\{ \sum_{j=1}^{4} \sum_{k=1}^{4} \frac{p_k}{p_k - \bar{p}_j} (\mathbf{A}_1 \mathbf{I}_k \mathbf{A}_1^{-1}) (\tilde{\mathbf{H}} + \mathrm{i} \breve{\mathbf{W}}) (\bar{\mathbf{A}}_1 \mathbf{I}_j \bar{\mathbf{A}}_1^{-1})^T \right\} \mathbf{i}_4. \end{aligned} \tag{23}$$

The original article can be found online at https://doi.org/10.1007/s00161-021-01061-9

X. Wang (✉)
School of Mechanical and Power Engineering, East China University of Science and Technology, 130 Meilong Road, Shanghai 200237, China
E-mail: xuwang@ecust.edu.cn

P. Schiavone (✉)
Department of Mechanical Engineering, University of Alberta, 10-203 Donadeo Innovation Centre for Engineering, Edmonton, AB T6G 1H9, Canada
E-mail: p.schiavone@ualberta.ca

$$F = \frac{q^2}{2\pi d}\mathbf{i}_4^T \,\mathrm{Re}\left\{\sum_{j=1}^{4}\sum_{k=1}^{4}\frac{-\bar{p}_j}{p_k-\bar{p}_j}(\mathbf{A}_1\mathbf{I}_k\mathbf{A}_1^{-1})\mathbf{H}_1(\bar{\mathbf{A}}_1\mathbf{I}_j\bar{\mathbf{A}}_1^{-1})^T\right\}\mathbf{i}_4$$
$$+\frac{q^2}{\pi d}\mathbf{i}_4^T \,\mathrm{Re}\left\{\sum_{j=1}^{4}\sum_{k=1}^{4}\frac{\bar{p}_j}{p_k-\bar{p}_j}(\mathbf{A}_1\mathbf{I}_k\mathbf{A}_1^{-1})(\tilde{\mathbf{H}}+\mathrm{i}\breve{\mathbf{W}})(\bar{\mathbf{A}}_1\mathbf{I}_j\bar{\mathbf{A}}_1^{-1})^T\right\}\mathbf{i}_4. \tag{24}$$

$$E = \frac{q}{2}\phi^C(0,d) = -\frac{q^2}{2\pi}\mathbf{i}_4^T \,\mathrm{Im}\left\{\mathbf{A}_1\sum_{j=1}^{4}\left\langle\ln\left[d(p_\alpha-\bar{p}_j)\right]\right\rangle\mathbf{K}\mathbf{I}_j\bar{\mathbf{A}}_1^T\right\}\mathbf{i}_4, \tag{26}$$

$$F = -\frac{\partial E}{\partial d} = \frac{q^2}{2\pi d}\mathbf{i}_4^T \,\mathrm{Im}\left\{\mathbf{A}_1\mathbf{K}\bar{\mathbf{A}}_1^T\right\}\mathbf{i}_4 = \frac{q^2}{4\pi d}(\mathbf{H}_1 - 2\tilde{\mathbf{H}})_{44}, \tag{27}$$

The final expression for the Coulomb force is correct and remains unchanged.