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Original

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Erratum to: "A poroplastic model of structural reorganisation in porous media of biomechanical interest", DOI 10.1007/s00161-015-0465-y

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¹ We would like to perform the following corrections to our paper [1].

2 Correction to Sect. 3

³ In Eq. (11b), $I_1(C_e)$ should be replaced with $\hat{I}_1(C_e)$. Thus, the corrected ⁴ equation reads

$$I_{2} = \hat{I}_{2}(C_{e}) = \frac{1}{2} \left\{ [\hat{I}_{1}(C_{e})]^{2} - tr[(\boldsymbol{\eta}^{-1}C_{e})^{2}] \right\} = \frac{1}{2} \left\{ I_{1}^{2} - tr[(\boldsymbol{B}_{p}\boldsymbol{C})^{2}] \right\}, \quad (11b)$$

5 Corrections to Sect. 4

In the sentence starting one line after Equation (63c) with "In particular,
...", and ending with Equation (65), the wording "acoustic tensor" is
incorrect and should be replaced with "first elasticity tensor". Accordingly,
the corrected text should read as reported below:

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¹⁰ "In particular, $\mathbb{A}_{n,k-1,l-1}^{\mathrm{sc}}$ is the constitutive part of the first elas-¹¹ ticity tensor computed at the *l*th iteration in $B_{\mathrm{p}n}$ and at the *k*th ¹² iteration in p_n and χ_n , i.e.

$$\mathbb{A}_{n,k-1,l-1}^{\rm sc} = \frac{\partial \hat{\boldsymbol{P}}_{\rm sc}}{\partial \boldsymbol{F}} (\boldsymbol{F}_{n,k-1}, \boldsymbol{B}_{{\rm p}n,l-1}), \qquad (64)$$

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while $\mathbb{L}_{n,k-1,l-1}$ is a fictitious elasticity tensor, introduced by the algorithm, and induced by the Gâteaux derivative of the functional \mathfrak{L} with respect to the deformation [cf. (58)], i.e.

$$D_{\chi}\mathfrak{L}(\Lambda_{n,k-1,l-1})[\boldsymbol{h}_{n,k}] := \int_{\mathcal{C}_{\mathrm{R}}} \boldsymbol{g} \operatorname{Grad} \tilde{\boldsymbol{u}} : \mathbb{L}_{n,k-1,l-1} : \boldsymbol{H}_{n,k} .$$
(65)

2. In the text starting one line after Equation (65) with "It is important ..." and ending with "... fails to be satisfied.", the reference to the papers [3,4] is incorrect. Hereby, we reformulated the text and corrected the reference to the works [3,4] as reported below.

²⁰ "The effective elasticity tensor

$$(\mathbb{A}_{n,k-1,l-1}^{\mathrm{sc}} - \mathbb{L}_{n,k-1,l-1})$$

should be such that the matrix associated with the bilinear form 21 $a(\cdot, \cdot)$ in the Finite Element discretisation of (62a) is invertible. 22 Although this is actually the case for the problem at hand, we have 23 not formulated theorems yet, which predict when this condition fails 24 to be satisfied. In linearised Elasticity, it is often required that the 25 elasticity tensor is strongly elliptic, a condition that is also related 26 to the existence of 'plane progressive elastic waves in all possible 27 directions' and to the reality of wave speeds [2]. In the context of 28 Elastoplasticity, the issue of strong ellipticity has been studied, for 29 example, in [3], whereas a spectral analysis of the acoustic tensor 30 associated with a particular constitutive law for the stress tensor 31 can be found in [4]." 32

Note that the references [2], [3], and [4] correspond, respectively, to the references [68], [17], and [18] of the original paper [1].

3. In the sentence "The algorithm proposed in this paper $[\dots]$ with respect to B_{pn} ." it should be emphasised that the algorithm requires a linearisation also with respect to the pressure evaluated at the time instant t_n , i.e. p_n . Accordingly, the corrected text should read as follows:

³⁹ "The algorithm proposed in this paper requires a linearisation with ⁴⁰ respect to p_n and χ_n , and one with respect to \boldsymbol{B}_{pn} ."

41 Corrections to Sect. 5

In the last paragraph, the sentence "Within the Newton iteration, ... linearised
sub-problems." should be changed as follows:

- "Within the Newton iteration, an ILU-decomposition, accelerated by a
- ⁴⁵ Bi-CGSTAB method, solves the linearised sub-problems."

46 **References**

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