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ERRATUM

Erratum to: Generalized Solution for 1-D Non-Newtonian Flow in a Porous Domain due to an Instantaneous Mass Injection

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A review of the above work has revealed the following errors listed below.

(i) In the expression of the mobility ratio k/μ_{ef}, the factor $(3+n)$ is wrongly written for the factor $(3n+1)$; hence the correct formulations of Eqs. (4) and (15) should read:

$$\frac{k}{\mu_{\text{ef}}} = \frac{1}{2H}\left(\frac{n\phi}{3n+1}\right)^n \left(\frac{8k}{\phi}\right)^{(1+n)/2}, \tag{4}$$

$$\chi_n = \frac{8^{(1+n)/2}}{2}\left(\frac{n}{3n+1}\right)^n. \tag{15}$$

(ii) There is a missing minus sign before the pressure gradient within parentheses on the r.h.s. of Eq. (5); the correct formulation is

$$\frac{\partial^2 p}{\partial r^2} + \frac{(d-1)n}{r}\frac{\partial p}{\partial r} = n\left(\phi \cdot c_0 + c_p\right)\left(\frac{\mu_{\text{ef}}}{k}\right)^{1/n}\left(-\frac{\partial p}{\partial r}\right)^{(n-1)/n}\frac{\partial p}{\partial t}; \tag{5}$$

this does not affect further developments which are based on the correct dimensionless version (14).

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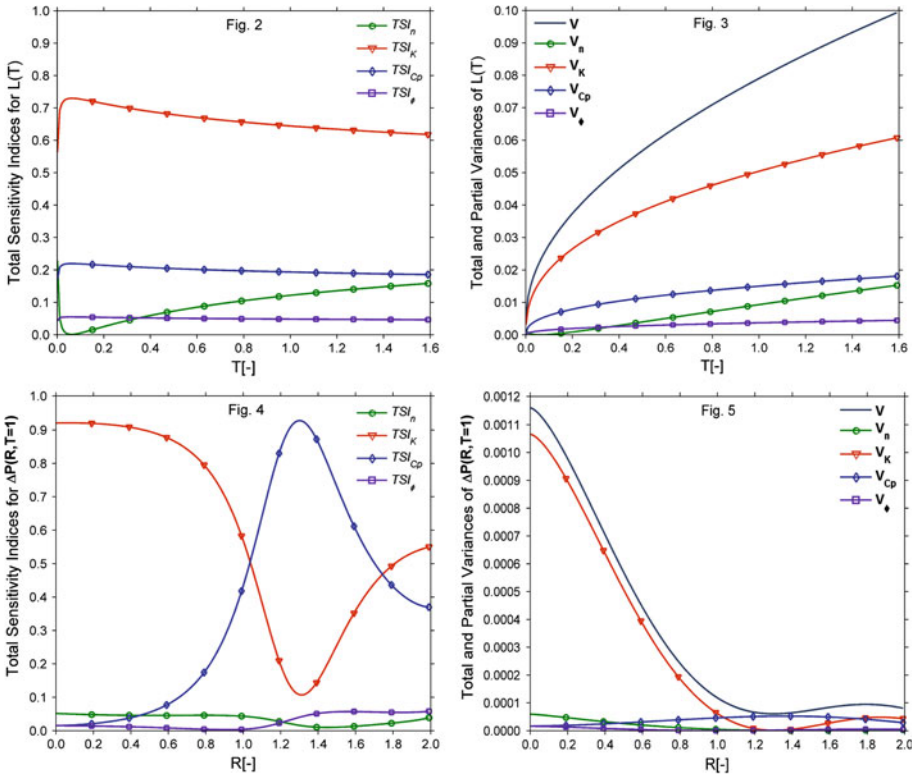

Fig. 2–5 **2** Total sensitivity indices (TSI) of each random parameter (n, K, C_p, ϕ) with respect to the front position $L(T)$ versus time T for cylindrical geometry ($d = 2$), $S = 1$, $M_0 = 1$, $r_c = 1$; **3** As (**2**) but total and partial variances (V); **4** As (**2**) but with respect to the excess pressure ΔP versus radial distance R and $T = 1$; **5** As (**4**) but total and partial variances

(iii) There is a missing factor $K^{(n+1)/2n}$ in the definition of dimensionless velocity V; hence the correct versions of Eqs. (13) and (31) are:

$$V = \frac{\chi_n^{1/n}}{\phi^{(1-n)/2n}} K^{(n+1)/2n} \left(-\frac{\partial P}{\partial R}\right)^{1/n}, \tag{13}$$

$$V = \frac{\chi_n^{1/n}}{\phi^{(1-n)/2n}} K^{(n+1)/2n} \left(\frac{1-n}{1+n} A\beta\right)^{1/(1-n)} T^{-[(1+d)]/[1+n+d(1-n)]} \eta(\eta_1^{1+n} - \eta^{1+n})^{1/(1-n)}. \tag{31}$$

(iv) The exponent of dimensionless permeability K in Eq. (16) is $(1 + n)/2n$ and not $(1 - n)/2n$; the correct version is

$$A = (r_c\phi + C_p) \frac{\phi^{(1-n)/2n}}{\chi_n^{1/n} K^{(1+n)/2n}}. \tag{16}$$

As a consequence of corrections (i) and mainly of (iv), Figs. 2–5 in Di Federico and Ciriello (2012) need amendment. The revised version of the figures, drawn for dimensionless injected mass $M_0 = 1$, is shown below. It is seen that the overall trends discussed in

Di Federico and Ciriello (2012) remain valid, albeit with a larger influence of permeability on the variance of front position and pressure and, correspondingly, a higher total sensitivity index for permeability.

Moreover, the reference to Di Federico et al. (2010) in Di Federico and Ciriello (2012) contains a typographical error in page number. That reference should read as indicated in the reference section of this erratum.

References

Di Federico, V., Ciriello, V.: Generalized solution for 1-D non-Newtonian flow in a porous domain due to an instantaneous mass injection. Transp. Porous Med. **93**, 63–77 (2012). doi:10.1007/s11242-012-9944-9

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