Corrigendum

Corrigenda: "Similarity solutions for spreading of a two-dimensional non-Newtonian gravity current in a porous layer" [J. Non-Newton. Fluid Mech. 177–178 (2012) 46–53] and "Spreading of axisymmetric non-Newtonian power-law gravity currents in porous media" [J. Non-Newton. Fluid Mech. 189–190 (2012) 31–39]

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A review of the above works has revealed a few minor errors listed below. All calculations and subsequent work were based on correct equations and are not affected.

(i) In the first paper [1], Eq. (3) expressing the mobility ratio k/μ_{ef} is incorrect in that the factor $(3 + n)$ mistakenly appears for $(3n + 1)$; the correct formulation is

$$\frac{k}{\mu_{ef}} = \frac{1}{2m}\left(\frac{n\phi}{3n+1}\right)^n \left(\frac{8k}{\phi}\right)^{(1+n)/2}. \tag{1}$$

(ii) In [1] an error appears in Ref. [49]. This reference should read as indicated in the reference section of this corrigendum; the number refers to the numbering of references used in [1].

(iii) An error similar to (i) occurred in Eq. (2) of the second paper [2]. The rectification is therefore

$$\frac{k}{\mu_{eff}} = \frac{k^*}{m} = \frac{1}{2C_t}\frac{1}{m}\left(\frac{n\phi}{3n+1}\right)^n \left(\frac{50k}{3\phi}\right)^{(1+n)/2}. \tag{2}$$

(iv) In Eq. (17) of [2], the symbol g_N appears for η_N. The correct formulation is

$$\psi(\zeta) = \frac{n^n}{(n+1)(n+3)^n}(1-\zeta^{n+1}) \text{ and } \eta_N$$
$$= \left[\pi \frac{n^n}{(n+3)^{n+1}}\right]^{-1/(n+3)}. \tag{3}$$

(v) In [2], the scale of the horizontal axis in Fig. 2a–d is incorrect. The limits are 0–0.4 but should be 0–1.0. Values of the shape function are correct. A revised Fig. 2 is reported below.

References

[1] V. Di Federico, R. Archetti, S. Longo, Similarity solutions for spreading of a two-dimensional non-Newtonian gravity current in a porous layer, J. Non-Newton. Fluid Mech. 177–178 (2012) 46–53. http://dx.doi.org/10.1016/j.jnnfm.2012.04.003.
[2] V. Di Federico, R. Archetti, S. Longo, Spreading of axisymmetric non-Newtonian power-law gravity currents in porous media, J. Non-Newton. Fluid Mech. 189–190 (2012) 31–39. http://dx.doi.org/10.1016/j.jnnfm.2012.10.002.
[49] V. Di Federico, M. Pinelli, R. Ugarelli, Estimates of effective permeability for non-Newtonian fluid flow in randomly heterogeneous porous media, Stoch. Environ. Res. Risk Assess. 24 (2010) 1067–1076. http://dx.doi.org/10.1007/s00477-010-0397-9.
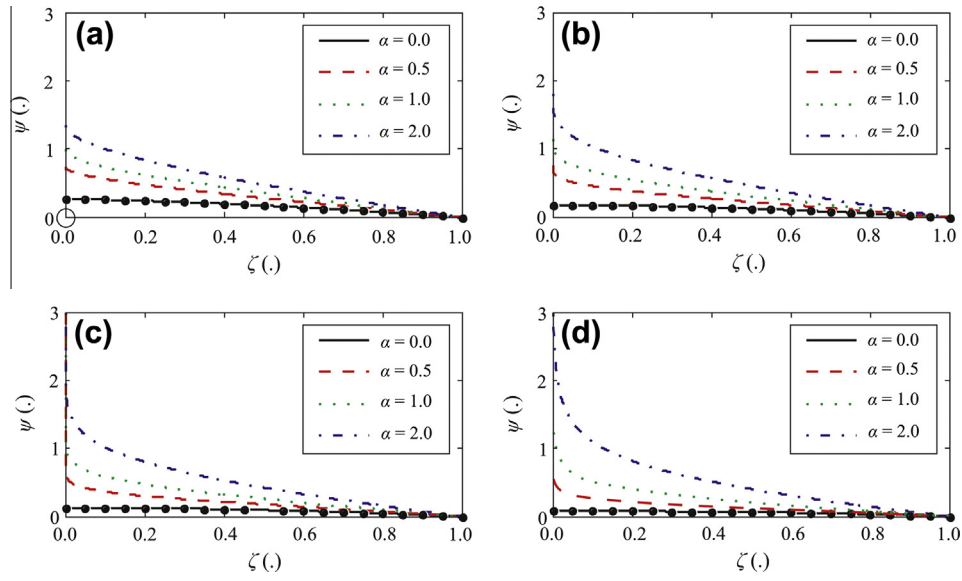
Fig. 2. Shape factor ψ vs. reduced similarity variable ζ for different values of α and $n = 0.5$ (a), $n = 0.75$ (b), $n = 1.0$ (c) and $n = 1.5$ (d).