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CORRIGENDUM : "RAYLEIGH-TAYLOR INSTABILITY OF VISCOUS-VISCOELASTIC FLUIDS THROUGH POROUS MEDIUM" by R. C. Sharma and Pardeep Kumar [*Indian J. pure appl. Math.* **24**(9) (1993), 563-569]

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A mathematical instability has crept in when eqn. (25) has been made free of radicals (here, by squaring, as K involves the square root). There is no physical instability as can be shown with the highly viscous case (the viscoelastic and adjoining viscous fluid are assumed to be highly viscous).

(i) The last line of 'Abstract' should read as :

However, the stability/instability of two superposed viscous-viscoelastic fluids through porous medium separated by a horizontal boundary remain unaffected in the presence of a uniform rotation.

(ii) Equation (26) onwards should read as :

Since K involves square root and if eqn. (25) is made free of radicals, it has to be squared and mathematical (and not physical) instability creeps in (Goel[2]). There is no physical instability as can be shown here as under with the highly viscous case (the viscoelastic and adjoining viscous fluid are considered to be highly viscous). Here the kinematic viscosities of both fluids are assumed to be equal i.e. $\nu_1 = \nu_2 = \nu$ (Chandrasekhar[1], p. 443), as this simplifying assumption does not obscure any of the essential features of the problem.

For highly viscous case, eqn. (26) yields

$$K = \frac{k}{\left[1 + \frac{1}{2}\frac{4\Omega^2(1+\lambda n)^2}{\left\{n(1+\lambda n) + (1+\lambda_0 n)\frac{\nu\varepsilon}{k_1}\right\}^2}\right]}$$

Substituting this value of K in eqn. (25) and simplifying we get

$$A_{11}\, n^{11} + A_{10}\, n^{10} + \ldots + A_2\, n^2 + A_1\, n + A_0 = 0, \qquad \ldots (27)$$

where

$$A_{11} = k\lambda^4,$$

$$A_0 = -gk^2 \frac{\nu^3 \varepsilon^3}{k_1^3}\left(\frac{\nu^2 \varepsilon^2}{k_1^2} + 2\,\Omega^2\right)(\alpha_2 - \alpha_1), \qquad \ldots (28)$$

and the coefficients A_1-A_{10}, being quite lenghty and not needed in the discussion of stability, have not been written here.

It is evident from eqn. (27) that the system is stable for potentially stable ($\alpha_2 < \alpha_1$) [as A_0-A_{11} are all positive] and unstable for potentially unstable ($\alpha_2 > \alpha_1$) configuration. The rotation, thus, has no effect on the stability/instability of two superposed viscous-viscoelastic fluids through porous medium separated by a horizontal boundary".

REFERENCES

1. S. Chandrasekhar, *Hydrodynamic and Hydromagnetic Stability*, Dover Publications, New York, 1981.
2. A. K. Goel, *Indian J. pure appl. Math.* **26**(4) (1995), 391-92.