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Nonstationary flow of a Stokesian fluid through a porous medium and thermal effects

The full system of nonstationary flow of a viscous fluid which takes also into account thermal effects, is considered, [1]. Such flow through a porous elastic medium is considered: asymptotic two-scale analysis leads to modified Darcy's equation [2] which is accompanied by heat production equation. We show that the system obeys the first and second laws of thermodynamics, according to Penrose and Fife requirement of thermodynamic consistency.

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3. O. Penrose and P. C. Fife, *Physica* D 43 44-62 (1990)