CORRIGENDUM

On nonlinear convection in mushy layers. Part 1. Oscillatory modes of convection

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The paper presents various analytical expressions relating to coefficients in small-amplitude evolution equations for convection in mushy layers. Some of the deductions and graphical illustrations were made using inadequate numerical precision, which led to erroneous deductions. In particular, equation (13*a*) is singular at $\omega_{01} = \pi$, and care is needed when using it to determine G_t in the neighbourhood of the singularity. As $\omega_{01} \to \pi$

$$R_{01} \sim 3\pi G_t \sqrt{G}/4,$$

which illustrates in particular that the singularity is removable. The numerical error made in simply taking $\pi = 3.14$ shows up in figures 1–7, which are reproduced here in corrected form, numbered C1–C7. Note the change of scale of the ordinate in figures 2, 3, 4, 6, and 7 compared to the original versions.

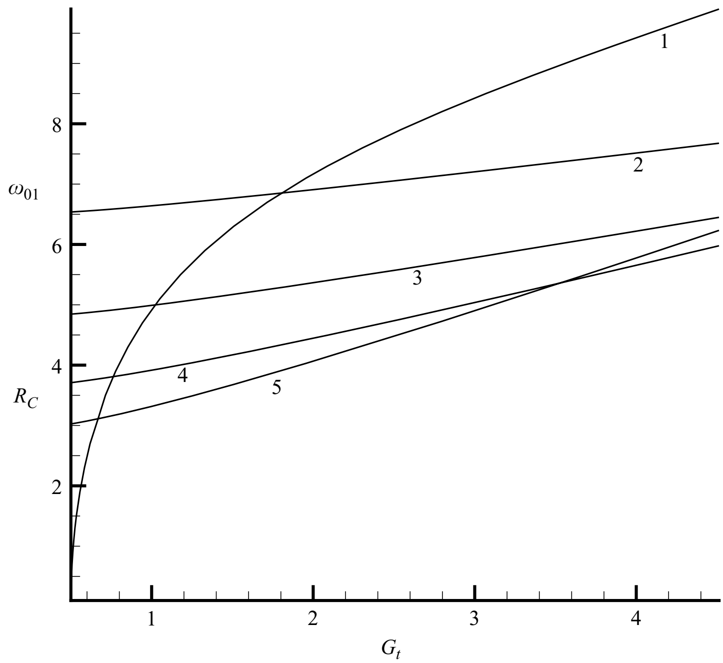

Figure C1. The frequency ω_{01} and the critical value of the scaled Rayleigh number R_C versus G_t. The curve labelled 1 shows ω_{01}. Curves 2, 3, 4 and 5 show R_C and correspond, respectively, to $G = 1.01$, 2.0, 4.0 and 8.0.

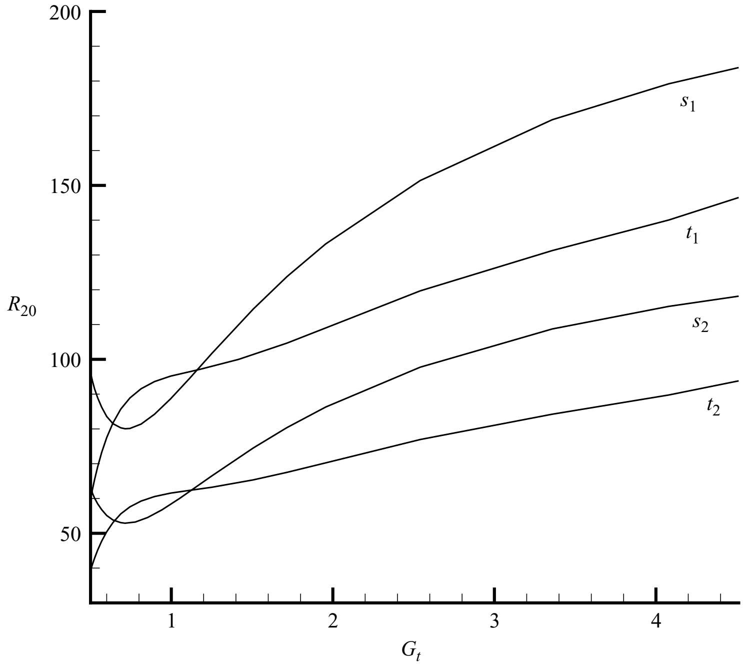

FIGURE C2. R_{20} versus G_t for rolls. R_{20} for standing rolls (s) and simple travelling rolls (t) is plotted for $G = 2.0$ and $K_2 = 0.1571$ (s_1, t_1), and for $G = 4.0$ and $K_2 = 0.3142$ (s_2, t_2).

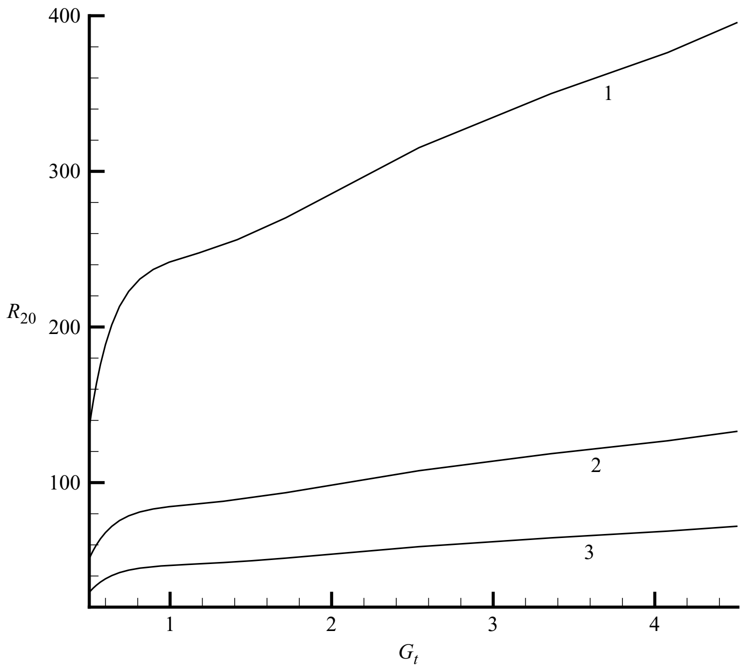

FIGURE C3. R_{20} versus G_t for simple travelling rolls. $K_2 = 0.4712$ and graphs labelled 1, 2 and 3, present, respectively, $R_{20}^{(st)}$ for $G = 2.0, 4.0$ and 8.0.

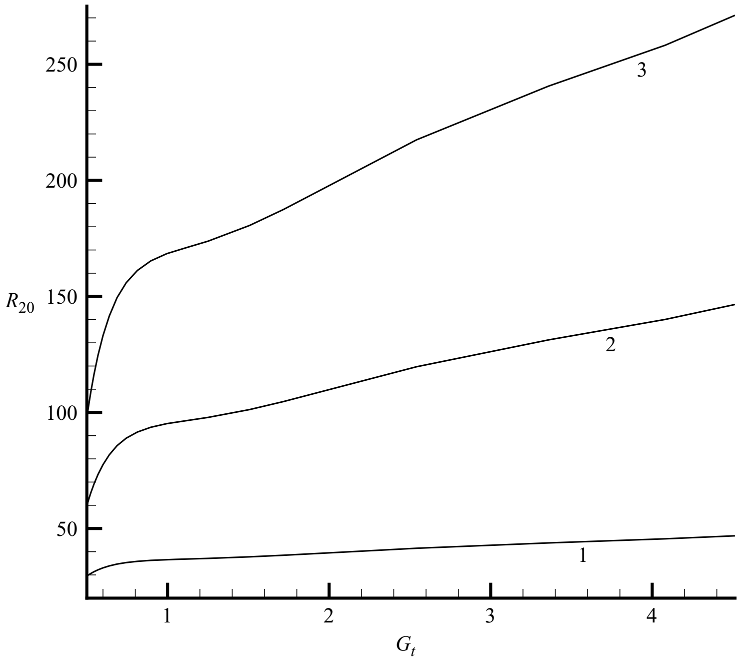

FIGURE C4. R_{20} versus G_t for simple travelling rolls. $G = 2.0$ and graphs labelled 1, 2 and 3 present, respectively, $R_{20}^{(st)}$ for $K_2 = 0.0314, 0.1571$ and 0.3142.

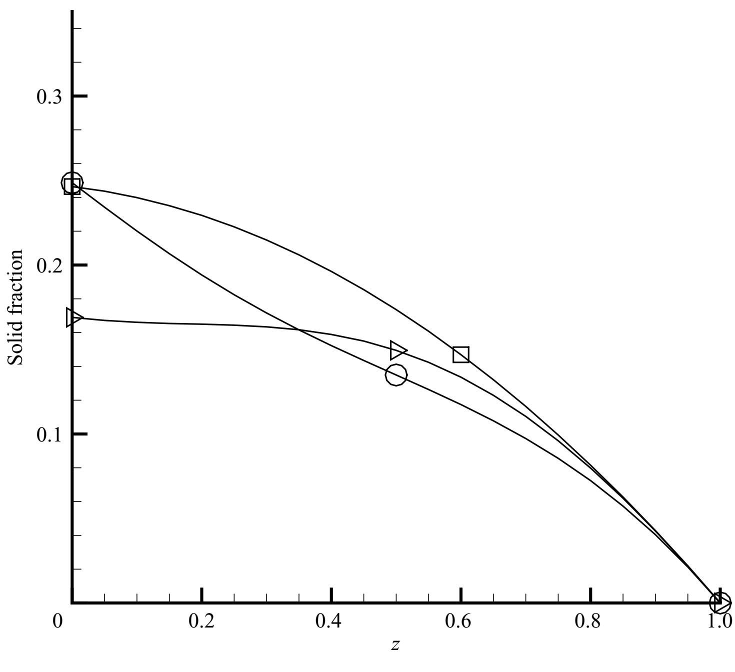

FIGURE C5. Solid fraction for standing rolls versus z for $G = 2.0$, $K_2 = 0$ and $G_t = 0.7$. Here graphs labelled by the square, circle and triangle symbols show, respectively, the basic solid fraction ϕ_B, $\tilde{\phi}(y = 0, z, t = 0)$ and $\tilde{\phi}(y = 0, z, t = 0.5)$.

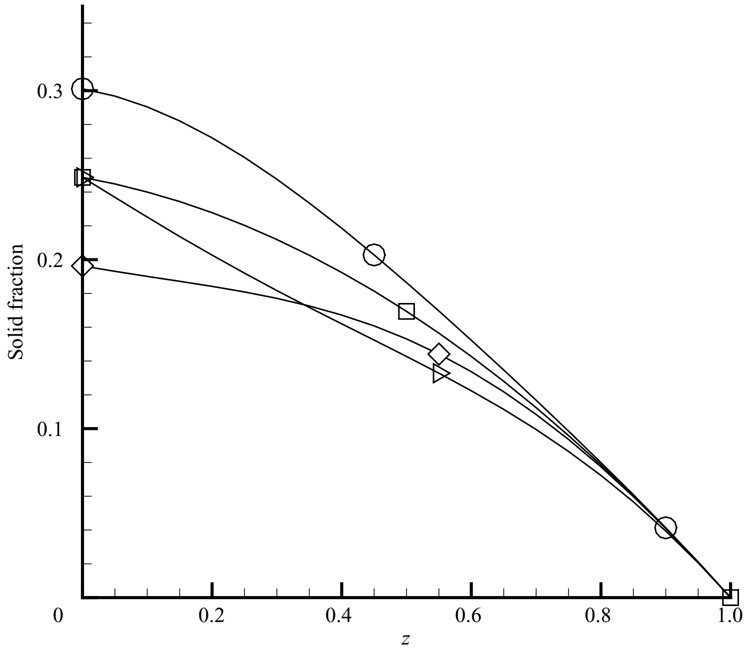

FIGURE C6. Solid fraction for simple travelling rolls versus z for $G = 2.0$, $K_2 = 0$ and $G_t = 0.67$. Here graphs labelled by the square, circle, triangle and diamond symbols show, respectively, $\phi_B, \tilde{\phi}(y = 0.5, z, t = 0)$, $\tilde{\phi}(y = 0.5, z, t = 0.5)$ and $\tilde{\phi}(y = 0, z, t = 0.5)$.

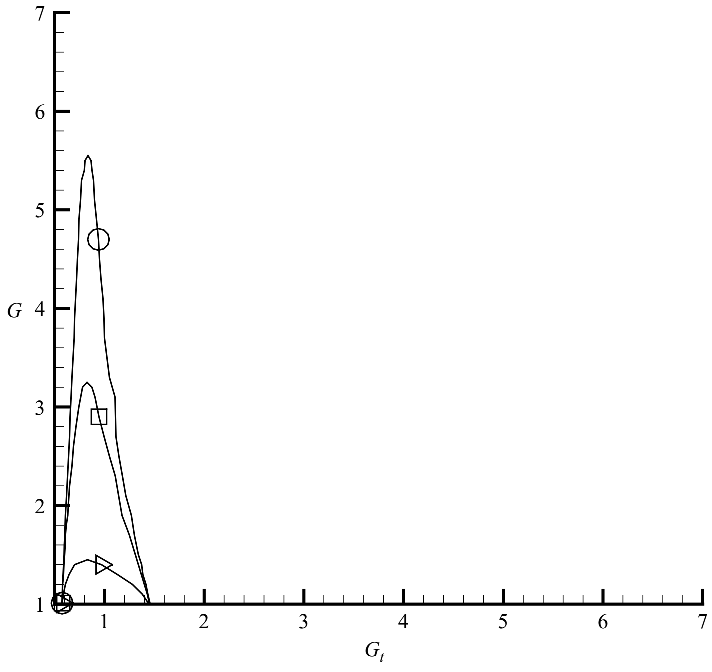

FIGURE C7. Regions of stable and preferred oscillatory modes of convection in the (G_t, G)-plane for different values of K_2. The stability boundaries labelled by the circle, square and triangle symbols correspond, respectively, to $K_2 = 0.2199, 0.1671$ and 0.0314. For a given K_2 standing rolls are stable in the small region bounded by the stability curve, while simple travelling rolls are stable outside that region.