Erratum: "Applications of the kinetic theory for a model of a confined quasi-two dimensional granular mixture: Stability analysis and thermal diffusion segregation" [Phys. Fluids 36, 033326 (2024)]

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The expression of the term Z appearing in Eq. (A12) of Ref. 1 should be

$$Z = \gamma_1 \left(\frac{\partial \zeta_1^*}{\partial \Delta^*} \right) - 2M\gamma_1, \tag{1}$$

where the partial derivative is with respect to Δ^* instead of γ_1. This modification causes changes in Fig. 5 and some statements made in Sec. IV of Ref. 1.

The list of needed changes is as follows:

1. In the Abstract, the sentence "In the absence of gravity, the results indicate that Λ is always positive and hence, the larger particles tend to accumulate near the cold plate. However, when gravity is present,…." should be replaced by "Our results show…"
2. Equations (51) and (52) should be replaced, respectively, by the following equations:

$$\left(\frac{\partial \zeta_0^*}{\partial \Delta^*} \right)_s = -\frac{\sqrt{2}\pi^{\frac{d-1}{2}}}{d\Gamma\left(\frac{d}{2}\right)} \left(\sqrt{2\pi}\alpha + 4\Delta^* \right), \tag{2}$$

$$B = -\frac{\pi^{\frac{d-1}{2}}}{\sqrt{2}d\Gamma\left(\frac{d}{2}\right)} \Delta^* \left(\sqrt{2\pi}\alpha + 4\Delta^* \right) < 0. \tag{3}$$

3. Figure 1 of this Erratum must be included in Sec. IV A (Absence of gravity).
4. In Sec. IV A (Absence of gravity), the paragraph "An exhaustive analysis……In this latter situation, segregation of the larger components toward the hot wall is also observed (see Fig. 5 of Ref. 61)." should be replaced by the paragraph "An exhaustive analysis on the dependence of the transport coefficient D_T^* on the parameter space of the system shows that D_T^* may be positive or negative. Thus, depending on the parameter space of the system, partial separation is observed where the larger components move toward the cold or the hot wall (see Fig. 3). As an illustration, Fig. 1 of this Erratum shows the marginal segregation curve ($\Lambda = 0$) delineating the regimes between $\Lambda > 0$ and $\Lambda < 0$ in the $(\sigma_1/\sigma_2, m_1/m_2)$-plane for a two-dimensional system with $x_1 = 0.5$ and a (common) coefficient of restitution $\alpha_{ij} \equiv \alpha = 0.5$. We observe that the region where the thermal diffusion factor becomes negative (larger particles segregate toward the hot/bottom plate) is dominant at both small mass ratios m_1/m_2 and/or large diameter ratios σ_1/σ_2. It must be remarked that the results derived here in the Δ-model contrast with those obtained when the granular mixture is driven with a stochastic thermostat (see Fig. 5 of Ref. 61)."
5. Figure 5 must be replaced by Fig. 2 of this Erratum.
6. The last sentence of the first paragraph of Sec. IV C (General Case) should say "In contrast to Fig. 4, we observe that the region

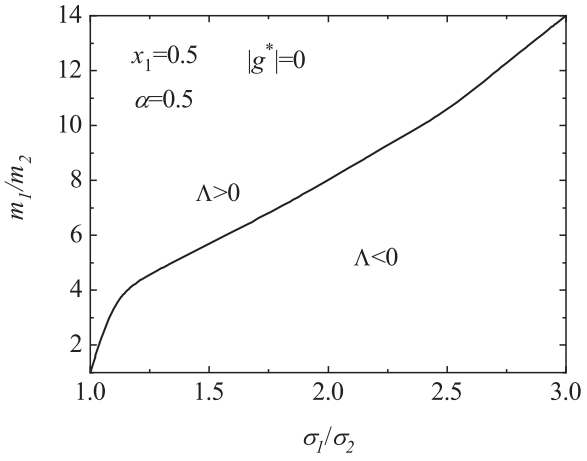

FIG. 1. Phase diagram for the marginal segregation curve ($\Lambda = 0$) in the $(\sigma_1/\sigma_2, m_1/m_2)$-plane for a two-dimensional system with $x_1 = 0.5$ and a (common) coefficient of restitution $\alpha = 0.5$. The limiting case $|g^*| = 0$ is considered.

$\Lambda > 0$ appears essentially for both small mass ratio m_1/m_2 and/or moderate inelasticity."

7. In Sec. V (Summary and discussion), third paragraph on page 10, the sentences "For the first case, we obtain $\Lambda > 0$ regardless of concentration or other material properties. Then, large particles sit near the cold plate. On the contrary, when the temperature gradient vanishes, the behavior is richer," should be replaced by the sentence "In both limiting cases, the behavior is rich."

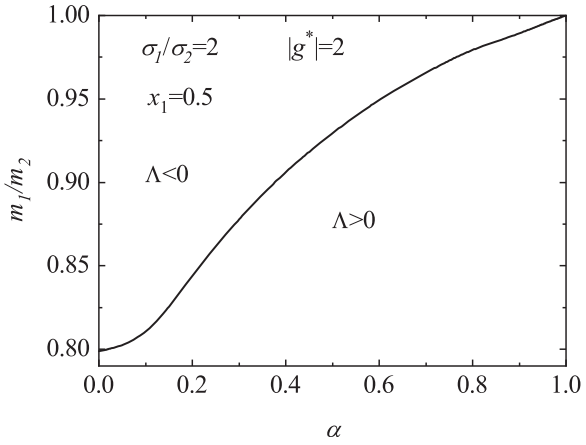

FIG. 2. Plot of the dependence of the marginal segregation curve ($\Lambda = 0$) on the (common) coefficient of restitution $\alpha_{ij} \equiv \alpha$ for a two-dimensional system with $x_1 = 0.5$, $\sigma_1/\sigma_2 = 2$, and $|g^*| = 2$.

DATA AVAILABILITY

The correct Mathematica code for computing the dependence of the set of transport coefficients on the parameter space of the system is available to the interested readers from the authors upon request.

[1]V. Garzó, R. Brito, and R. Soto, "Applications of the kinetic theory for a model of a confined quasi-two dimensional granular mixture: Stability analysis and thermal diffusion segregation," Phys. Fluids **36**, 033326 (2024).