

ERRATUM

Erratum to: Hyper-gourd theory: solving simultaneously the mysteries in particle physics, biology, oncology, neurology, economics, and cosmology

Ken Naitoh

Published online: 19 January 2013
 © ISAROB 2013

**Erratum to: Artif Life Robotics (2012) 17(2):275–286
 DOI 10.1007/s10015-012-0056-y**

Among the quasi-stable size ratios of $\varepsilon = r_{di}/r_{dj}$ [$i, j = 1, 2, i \neq j$] for two spheroid-like parcels connected, i.e., super-magic numbers in Table 1, the ratios related to the convection force for $m \neq 1$ and $\varepsilon \neq 1$ appear with the statistic indeterminacy of the contact position of two parcels, whereas the other ratios can exist even when the statistic indeterminacy effect due to small number of sub-particles inside a parcel is absent.

For details, the relation between dimensionless deformation rate γ_k ($\equiv a_k/b_k$ [$k = 1, 2$]) of each parcel dependent on dimensionless time and the size ratio of the two parcels $\varepsilon = r_{di}/r_{dj}$ [$i, j = 1, 2, i \neq j$], i.e., Eq. 2, should be described as

$$\frac{d^2}{dt^2} \gamma_i = \left\{ m_{ci} \left(\frac{d}{dt} \gamma_i \right)^2 + m_{cj} \left(\frac{d}{dt} \gamma_j \right)^2 + m_{si} \gamma_i^{\frac{5}{3}-m} + m_{sj} \gamma_j^{\frac{5}{3}-m} \right\} / \left(\text{Det} + \delta_{st} \right) \quad [\text{for } i = 1, 2, j = 1, 2, i \neq j] \quad (2)$$

with

$$\begin{aligned} m_{ci} &= \left[\left(-\varepsilon - \varepsilon^4 + \frac{2}{3} \varepsilon E_{0j} \gamma_j^{-1/3} \right) B_{0i} + \frac{2}{9} \varepsilon^{4-2\Delta m} E_{0i} \gamma_i^{-4/3} \right] \\ m_{cj} &= \left[\frac{2}{3} \varepsilon^{2+m} E_{0i} \gamma_j^{-1/3} B_{0j} - \frac{2}{9} \varepsilon^{2+m} E_{0i} \gamma_j^{-4/3} \right] \\ m_{si} &= \left(-\varepsilon - \varepsilon^4 + \frac{2}{3} \varepsilon E_{0j} \gamma_j^{-1/3} \right) C_{0i} \\ m_{sj} &= \frac{2}{3} \varepsilon^{2+m} E_{0i} \gamma_j^{-1/3} C_{0j} \\ \text{Det} &= -\varepsilon - \varepsilon^4 + \frac{2}{3} \varepsilon^4 E_{0i} \gamma_i^{-1/3} + \frac{2}{3} \varepsilon E_{0j} \gamma_j^{-1/3}, \\ B_{0k} &= \frac{1}{3} \frac{\gamma_k^2 - 2}{\gamma_k^2 - 1/2}, \\ C_{0k} &= \frac{3}{8} \frac{2\gamma_k^{2m} - 1/\gamma_k^m - \gamma_k^m}{\gamma_k^2 - 1/2}, \text{ and} \\ E_{0k} &= 3 \frac{\gamma_k^{7/3}}{\gamma_k^2 - 1/2} \quad [\text{for } k = 1, 2] \end{aligned}$$

where the parameter δ_{st} and Δm denote the random force due to small number of sub-particles inside a parcel and the indeterminacy effect (stochastic variation) of the contact surface position between two parcels connected, respectively. When we assume the relation of $\Delta m = (1 - m)/2$, Table 1 can be obtained.

The online version of the original article can be found under doi:10.1007/s10015-012-0056-y.

K. Naitoh (✉)
 Faculty of Science and Engineering, Waseda University,
 3-4-1 Ookubo, Shinjuku, Tokyo 169-8555, Japan
 e-mail: k-naito@waseda.jp
 URL: <http://www.k-naito.mech.waseda.ac.jp/>;
https://www.wnp7.waseda.jp/Rdb/app/ip/ipi0211.html?lang_kbn=0&kensaku_no=4181