

Errata: “Mean field approximation to a spatial host-pathogen model”

Marcus A. M. de Aguiar,^{1,2} Blake Stacey,^{3,2} and Yaneer Bar-Yam²

¹*Instituto de Física Gleb Wataghin, Universidade Estadual de Campinas*

²*New England Complex Systems Institute*

³*Martin A. Fisher School of Physics, Brandeis University*

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The article “Mean field approximation to a spatial-host pathogen model” by Rauch *et al.* [1] contains three mistyped equations. The errors were introduced in paper production and do not affect the paper’s results or conclusions. Eq. (18) should read

$$\frac{dy}{dt} = xh_{\zeta}(\tau r/x) - vy.$$

As published, Eq. (18) has an extra exponent ζ , so that the first term reads $xh_{\zeta}(\tau r/x)^{\zeta}$. Note that if we approximate $r = xy$ we must recover the mean-field equation for dy/dt , Eq. (11), which has no such exponent.

There are also sign errors in Eq. (20) and in the unnumbered equation for dr_1/dt in the pair-approximation treatment of the system with two types of pathogen. In each case, the sign of the third term should be positive rather than negative. The correct equations are

$$\begin{aligned} \frac{dr}{dt} &= (p - r)h_{\zeta-1}(\tau r/x) - vr \\ &+ wh_{\zeta-1}(gu/z) - \tau r [1 - h_{\zeta-1}(\tau r/x)], \end{aligned}$$

$$\begin{aligned} \frac{dr_1}{dt} &= \bar{\chi} \frac{\mu}{2} p h_{\zeta-1}(\tau_2 r_2/x) \\ &+ \bar{\chi} \left(1 - \frac{\mu}{2}\right) p h_{\zeta-1}(\tau_1 r_1/x) \\ &+ w_1 h_{\zeta-1}(gu/z) \\ &- \tau_1 r_1 [1 - h_{\zeta-1}((\tau_1 r_1 + \tau_2 r_2)/x)] \\ &- r_1 h_{\zeta-1}((\tau_1 r_1 + \tau_2 r_2)/x) - vr_1. \end{aligned}$$

These equations were replicated in an expanded treatment by de Aguiar *et al.* [2]. The computer code used to generate the figures in both articles used the correct equations. Consequently, the misprints reported in this note do not affect the results or conclusions of either paper.

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- [1] E. M. Rauch, M. A. M. de Aguiar, Y. Bar-Yam, “Mean field approximation to a spatial host-pathogen model,” *Physical Review E* **67**, 047102 (2003).
[2] M. A. M. de Aguiar, E. M. Rauch, Y. Bar-Yam, “Invasion

and extinction in the mean field approximation for a spatial host-pathogen model,” *Journal of Statistical Physics* **114**, 1417–51 (2004).