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ERRATUM

Erratum to: Triggered Fronts in the Complex Ginzburg Landau Equation

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The expansion given in the main result, Theorem 1, of Goh and Scheel (2014) is incorrect. The correct statement is as follows.

Theorem 1 *Fix* $\alpha, \gamma \in \mathbb{R}$ *and assume that there exists a generic free front. Then there exist trigger fronts for* $c < c_{\text{lin}}$, $|c - c_{\text{lin}}|$ *sufficiently small. The frequency of the trigger front possesses the expansion*

$$\omega_{\text{tf}}(c) = \omega_{\text{abs}}(c) + \frac{2}{\pi}(1+\alpha^2)^{3/4}|\Delta Z_{\text{i}}|(c_{\text{lin}} - c)^{3/2} + \mathcal{O}((c_{\text{lin}} - c)^2). \quad (0.1)$$

Here,

$$\omega_{\text{abs}}(c) = -\alpha + \frac{\alpha c^2}{2(1+\alpha^2)},$$

and ΔZ_{i} *is defined in* (3.22), *below. Furthermore, for* $\alpha \neq \gamma$ *the selected wavenumber has the expansion*

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$$k_{\mathrm{tf}} = k_{\mathrm{lin}} - g_1(\alpha,\gamma)(c_{\mathrm{lin}} - c) - \frac{(1+\alpha^2)^{3/4}|\Delta Z_{\mathrm{i}}|}{\pi(1+\gamma^2)^{1/2}}(c_{\mathrm{lin}} - c)^{3/2} + \mathcal{O}((c_{\mathrm{lin}} - c)^2)$$

where $g_1(\alpha,\gamma) = \frac{1}{2(\gamma-\alpha)}\left(1 - \frac{1+2\alpha\gamma-\alpha^2}{\sqrt{(1+\alpha^2)(1+\gamma^2)}}\right)$. *The distance between the trigger and the front interface is given by*

$$\xi_* = \pi(1+\alpha^2)^{1/4}(c_{\mathrm{lin}} - c)^{-1/2} + (1+\alpha^2)^{1/2}\,\Delta Z_{\mathrm{r}} + \mathcal{O}((c_{\mathrm{lin}} - c)^{1/2}),$$

where ΔZ_{r} *is defined in* (3.22) *as well.*

The error in the original statement is caused by an incorrect transformation of the expansion from "hat" variables back to original variables. In particular, we neglected the dependence of m on c and ω. A correct calculation traces the scalings as a nonlinear transformation $\Upsilon : (c,\omega) \mapsto (\hat{c},\hat{\omega})$, which can, for the purpose of the expansion, be approximated by its linearization near the linear spreading parameters c_{lin}, ω_{lin},

$$(\hat{c},\hat{\omega}) = (2,0) + D\Upsilon\Big|_{c_{\mathrm{lin}},\omega_{\mathrm{lin}}}(\Delta c, \Delta\omega) + \mathcal{O}((\Delta\hat{c})^2, (\hat{\omega})^2),$$

with $\Delta c := (c_{\mathrm{lin}} - c)$ and $\Delta\omega := (\omega_{\mathrm{lin}} - \omega)$. The Inverse Function Theorem then gives $\Delta\hat{c} \sim (1+\alpha^2)^{1/2}\Delta c$ instead of our previous $\Delta\hat{c} \sim (1+\alpha^2)^{-1/2}\Delta c$. This leads to the change in the exponent of the $(1+\alpha^2)$–term throughout Theorem 1.

We also note a sign error of $\hat{\omega}$ in (3.11) that propagates through Sections 3.2–3.5 such that the first expansion in (3.27) should read

$$\hat{\omega}_*(\Delta\hat{c}) = -\frac{2\Delta Z_{\mathrm{i}}}{\pi\Delta j}(\Delta\hat{c})^{3/2} + \mathcal{O}((\Delta\hat{c})^2).$$

With this sign change and the correct scaling, (3.27) yields

$$\Delta\omega = -\left(\partial_c\,\omega_{\mathrm{abs}}(\alpha, c_{\mathrm{lin}})\right)\Delta c + \frac{2\Delta Z_{\mathrm{i}}}{\pi\Delta j}(1+\alpha^2)^{3/4}(\Delta c)^{3/2} + \mathcal{O}((\Delta c)^2),$$

from which we obtain the expansion as stated here by setting $\Delta j = -1$:

$$\omega = \omega_{\mathrm{abs}}(\alpha, c) - \frac{2\Delta Z_{\mathrm{i}}(1+\alpha^2)^{3/4}}{\pi\Delta j}(c_{\mathrm{lin}} - c)^{3/2} + \mathcal{O}((c_{\mathrm{lin}} - c)^2).$$

In the same manner, we obtain the expansions for the unscaled distance between the trigger and the invasion front, ξ_*, and for the selected wavenumber k_{tf} as stated in Theorem 1 above.

Reference

Goh, R., Scheel, A.: Triggered fronts in the complex Ginzburg–Landau equation. J. Nonlinear Sci. **24**, 117–144 (2014)