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Pulse Bifurcations in Stochastic Neural Fields*

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Abstract.

γ … θ, …
$\gamma \to \infty$, …

$$(\; . \;) \qquad (\; / \; \theta) = \begin{cases} \ldots & \geq \theta, \\ 0, & \ldots \theta. \end{cases}$$

… (.), … (.) … (.) … ff … fi … ff … (.)

$$\frac{(\;)}{} = \frac{(\;)}{} / \beta \frac{(\;)}{} + \int_{-\pi}^{\pi} (\; / \;) \; '(\; (\;)) \frac{(\;)}{},$$

… (.) … (. .) …

$$(\; . \;) \qquad (\;) = \int_{-\pi}^{\pi} (\; / \;) \; '(\; (\;)) \frac{(\;)}{} + \alpha \; (\; (\;)) \; ,$$

…

$$(\;) =$$

Figure 1. (A) ... $_{pitch}$. ... ($_{SN}$). ... $= 0.5$ ... $_{SN}$, ... (B) ... $= 2$ ... $= 0.25$

( ) =(0,), fi

λ

[illegible] (ζ, ζ) [illegible] c, [illegible] fi [illegible] s [illegible] c. [illegible] s [illegible]

$$(\;.\;) \qquad = \Delta (\quad + \zeta + \Psi(\;,\mu)) .$$

$\delta \in \mathbb{R}$

$$(\; + \alpha) \; (\;) + \int_{-\pi}^{\pi} (\;) \; '(\; (\;)) \; (\;) \; = \frac{''(\;)}{\alpha}$$

$$\Psi \; \zeta^* \; x \; = \delta \; \zeta \; \zeta^* \; x \; \alpha \; ''' \; 0 \; \zeta^* \; x \; \zeta^* \; x$$

$$= \frac{''' \; ' \; _f}{\alpha \; ' \; _f}$$

$''' \; ' \; _f = \int_{-\pi}^{\pi} '(\; (\;)) \; '''(\;) \; '(\;)$.

$$(\; . \;) \qquad = \frac{''' \; ' \; _f}{\alpha \; ' \; _f}$$

fi

$(\;) = (\;)$,

$$(\; + \alpha) \; ''(\;) = \int_{-\pi}^{\pi} (\;) \frac{(\; (\;))}{}$$

$$''' \; ' \; _f = \int_{-\pi}^{\pi} '(\; (\;)) \; '''(\;) \; '(\;) = \int_{-\pi}^{\pi} \frac{(\; (\;))}{} \; '''(\;)$$

$$= \int_{-\pi}^{\pi} \frac{(\; (\;))}{} \; ''(\;)$$

$$= \frac{}{+ \alpha} \int_{-\pi}^{\pi} \int_{-\pi}^{\pi} (\;) \frac{(\; (\;))}{} \frac{(\; (\;))}{} \qquad 0$$

(. 0) α β, (. 0),

$$(\; . \;) \qquad = 0, \qquad \pm = \pm \sqrt{\alpha(\beta \; \alpha) \frac{' \; _f}{''' \; ' \; _f}}$$

(.), fi

$$\pm(\;) = (\; + \; \pm) + (\mu),$$

$$\pm(\;) = (\; + \; \pm) \frac{\pm}{\alpha} '(\; + \; \pm) + (\mu)$$

[1]N (1.2), = , $\| \; '\|_f^2 = |\langle \; ''' \; ' \rangle|$ $\pm =$ $\pm\sqrt{\alpha(\; - \alpha)}$. A 3.1, .

2.3. Perturbed amplitude equation at the drift bifurcation.

Δ (. 0), (.), Δ. , (.), (( ) $\sim$ $\overline{\mu}$ (μ)) ff

$$( )\ (\beta/\ \alpha)\ ( ) +$$

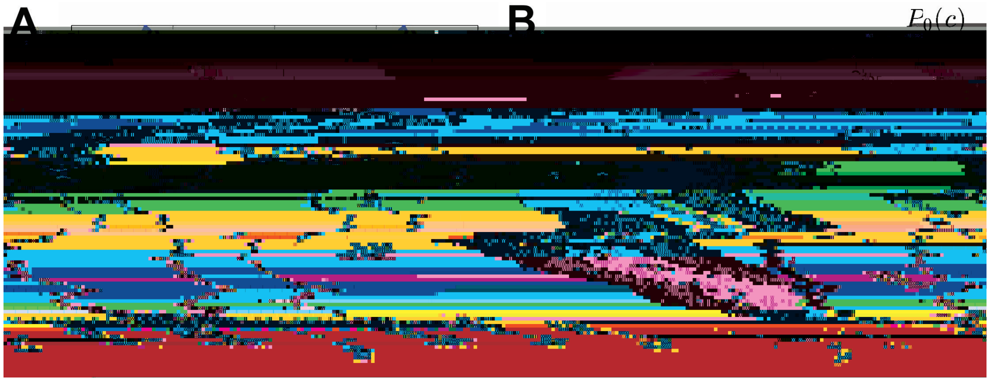

Figure 2. [illegible] $_0($ $)$ [illegible] c [illegible] b [illegible] c [illegible] ffic [illegible] (α) [illegible] (1.7). [illegible] c [illegible] (1.2), [illegible] fi [illegible] a (1.4), c [illegible] c [illegible] **C**( ) = ( ). (A) C [illegible]

$$(\,(\,))=\int_{-\pi}^{\pi}(\,)\,'(\quad+\quad)$$

(.), (.). fi fi θ ξ (.),

( ) =

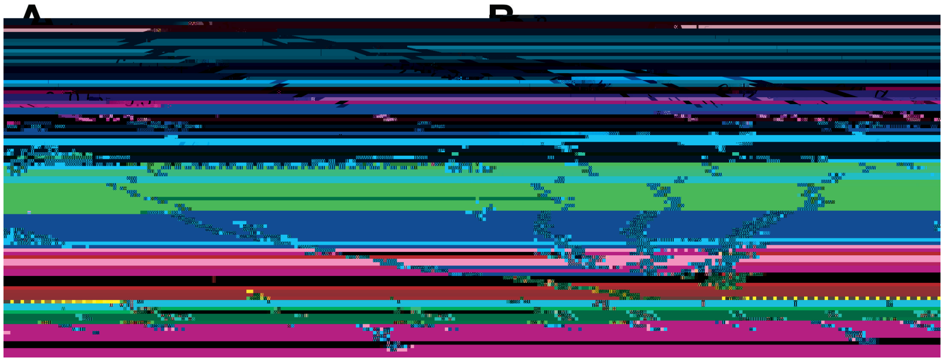

Figure 4. (A) [illegible] $_{pitch}$. (B) [illegible] α.

[illegible] (.) (. 0) [illegible] fi [illegible]

$$\frac{\quad}{+\alpha}\,\theta \qquad (\;.\;)$$

[illegible] fi [illegible] (.)

$$s \quad / \quad -\,(\theta(\;+\alpha) \qquad u \quad -\,(\theta(\;+\alpha) \qquad (\;.\;)$$

[illegible] fi [illegible] s

ﬃ $\gamma_\pm$

ﬀ $(\ (\xi),\ (\xi))$ (ξ),

$$\gamma\ \mathbf{v}\ +\gamma_-$$

[7] D. Blömker, M. Hairer, and G. A. Pavliotis, [illegible], N[illegible]y, 20 (2007), [illegible]. 1721 1744.
[8] D. Blömker, S. Maier-Paape, and G. Schneider, [illegible], D[illegible] C[illegible]. Dy[illegible] S[illegible] S[illegible] B, 1 (2001), [illegible]. 527 541.
[9] M. Bode,

[33] C. W. Gardiner, [illegible]

[59] M. Tsodyks, K. Pawelzik, and H. Markram, N ... c ..., N ... C-
.., 10 (1998), . 821 835.

[60] R. Veltz and O. Faugeras, c / b ... fi ...
..., A . A . Dy . S y ., 9 (2010), . 954 998.

[61] X.-J. Wang, N ... c ... c ... c ... c ... c ... c ..., P y .
R ., 90 (2010), . 1195 268.

[62] H. R. Wilson and J. D. Cowan,