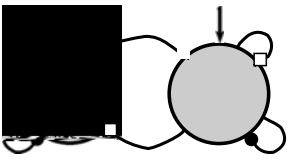
Effects of Time-Dependent Stimuli in a Competitive Neural Network Model of Perceptual Rivalry

Suren Jayasuriya · Zachary P. Kilpatrick

Abstract

[illegible]



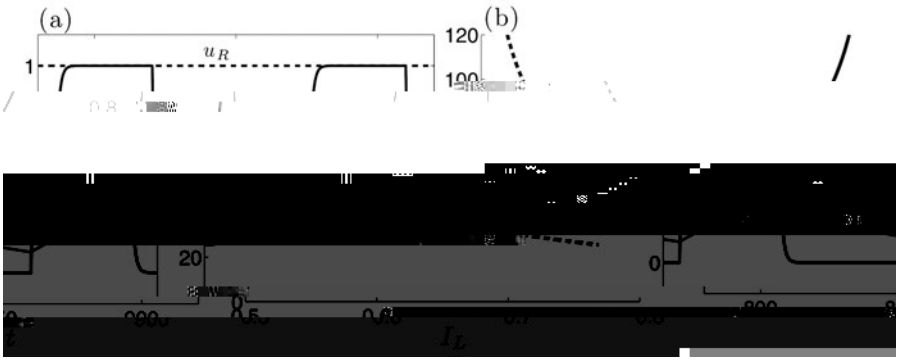


Fig. 5

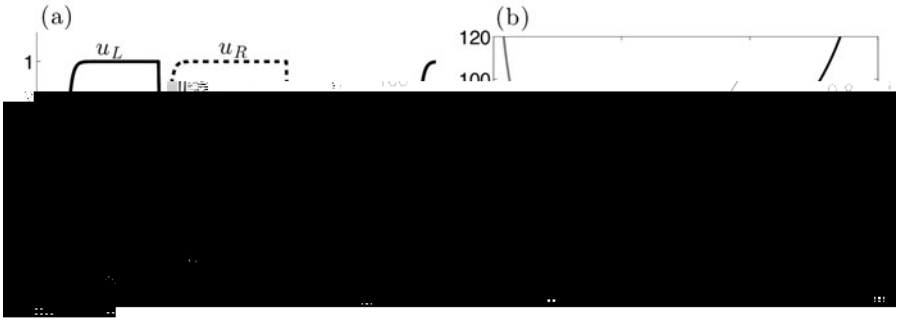


Fig. 6

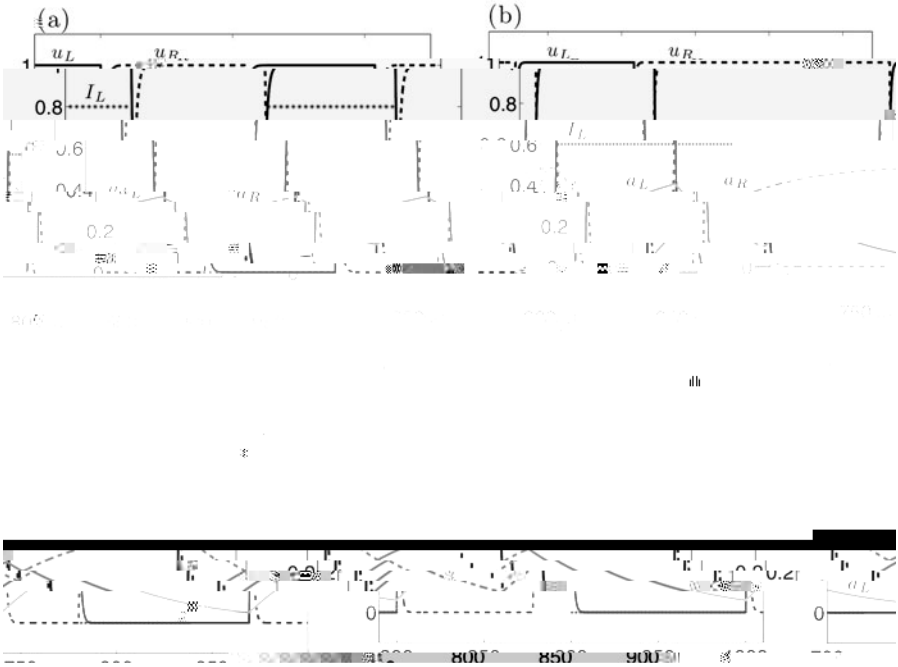


Fig. 7

$\alpha + \Delta I > a_L(t) \quad -\beta + I_R < a_R(t), \quad t \in (\ , T$

$I_L(t) =$

$$\alpha < a_L(T_I) = \varphi - \varphi - a_L(\ ) e^{-T_I/\tau},$$

$$I_R > a_R(T_I) = a_R(\ )e^{-T_I/\tau}.$$

$t = T_I$ $t = T_I$

$$-\beta < < a_L(t), \quad t \in (T_I, T_I),$$

α

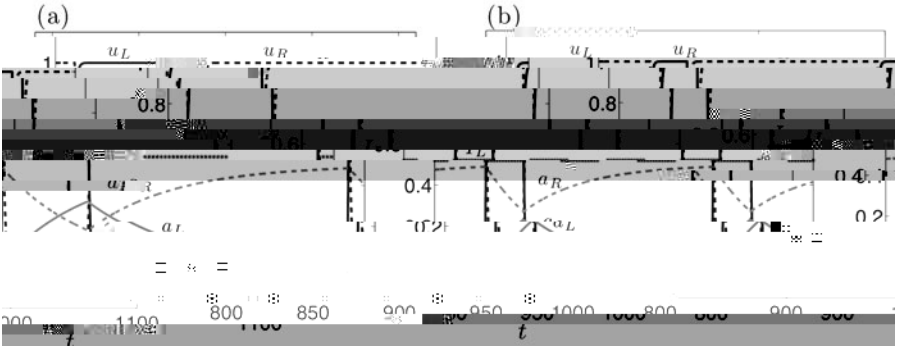
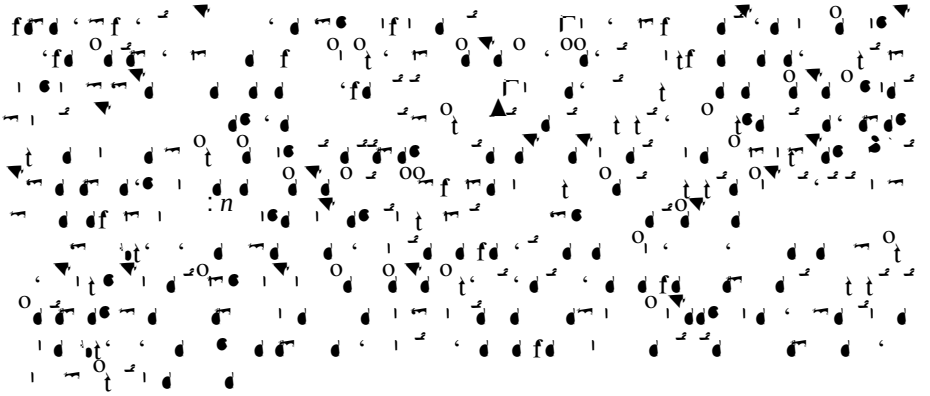
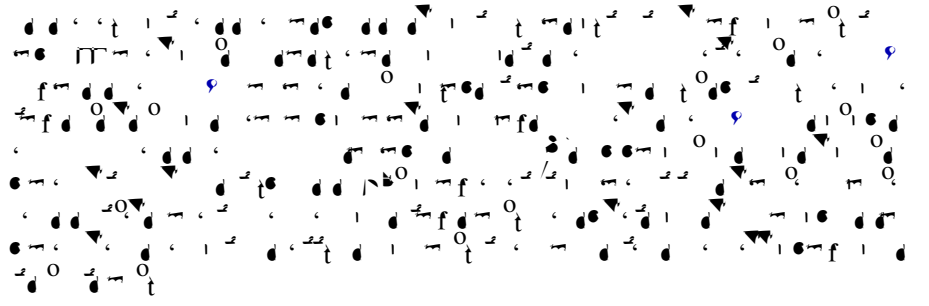
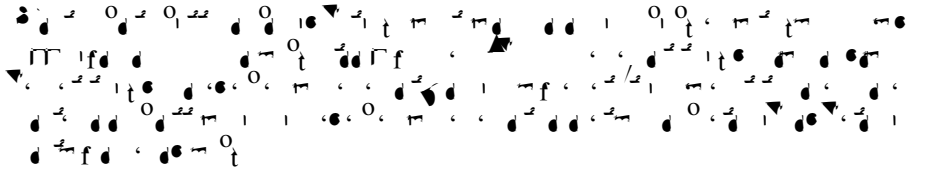


Fig. 8

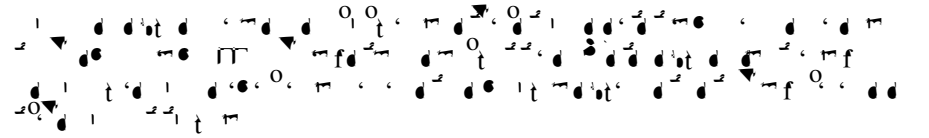


5 Time-Variation in Both Inputs





$$a_j(\ ) = a_j(\ T_I) = \frac{\varphi}{+\ e^{T_I/\tau}} \quad a_j(T_I) = \frac{\varphi}{+\ e^{-T_I/\tau}}, \quad j = L, R.$$



$$(\ \ ) \ \ : \quad \Delta I + \alpha - \beta > \frac{\varphi}{+\ e^{-T_I/\tau}},$$

$$(\ \ ) \ \ : \quad \alpha - \beta < \frac{\varphi}{+\ e^{-T_I/\tau}},$$

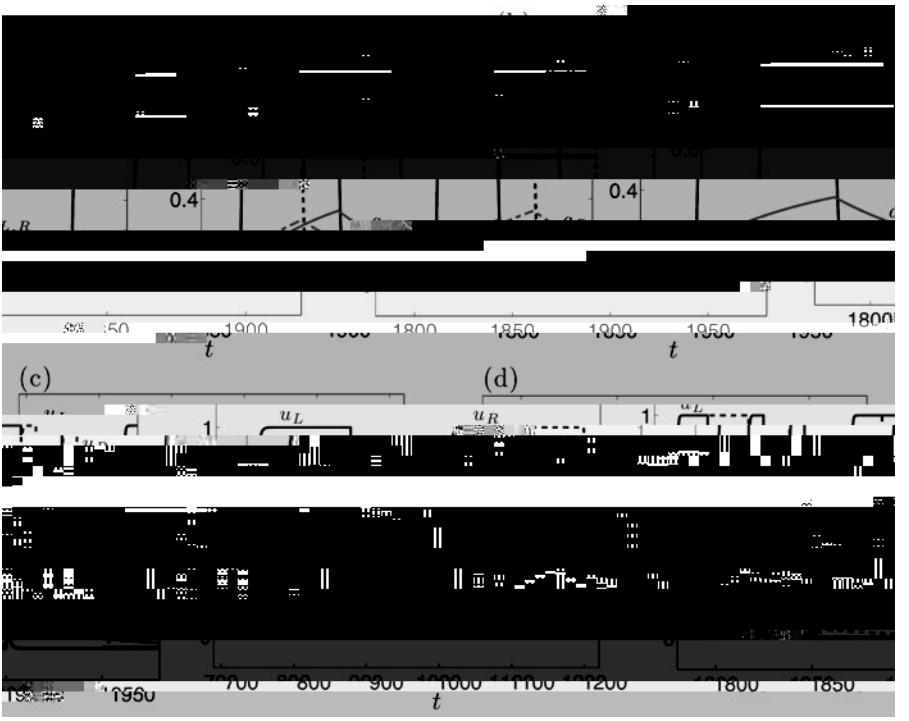


Fig. 10 [illegible] $I_L(t), I_R(t)$. [illegible]
a [illegible] $\Delta I =$. $T_I =$ **b** [illegible] $\Delta I =$. $T_I =$
c [illegible] $\Delta I =$. $T_I =$ **d** [illegible] $\Delta I =$. $T_I =$ $\alpha =$. $\beta =$. $\varphi =$. $\tau =$

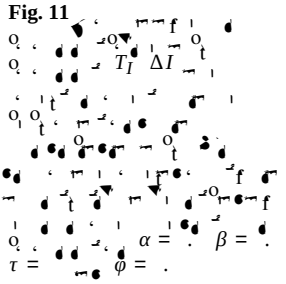
( ) : $< \dfrac{\varphi}{+ e^{T_I/\tau}}$,

( ) : $\Delta I > \dfrac{\varphi}{+ e^{T_I/\tau}}$.

φ [illegible]

T_I [illegible] τ [illegible]

Fig. 11



$$\Delta I > \frac{\varphi e^{- T_I/\tau}(- e^{-T_I/\tau} + e^{- T_I/\tau})}{\frac{\varphi+\beta-\alpha-\Delta I}{\alpha-\beta+\Delta I} + e^{- T_I/\tau}},$$

$$\alpha - \beta + \Delta I > \frac{\varphi \frac{\varphi+\beta-\alpha-\Delta I}{\alpha-\beta+\Delta I}(e^{-T_I/\tau} - e^{- T_I/\tau}) + \varphi e^{- T_I/\tau}}{\frac{\varphi+\beta-\alpha-\Delta I}{\alpha-\beta+\Delta I} + e^{- T_I/\tau}},$$

$$\alpha - \beta + \Delta I > \frac{(\alpha - \beta + \Delta I)(+ e^{- T_I/\tau} - e^{- T_I/\tau}) + \varphi(e^{-T_I/\tau} - e^{- T_I/\tau})}{- e^{-T_I/\tau} + e^{- T_I/\tau}},$$

T_I ΔI

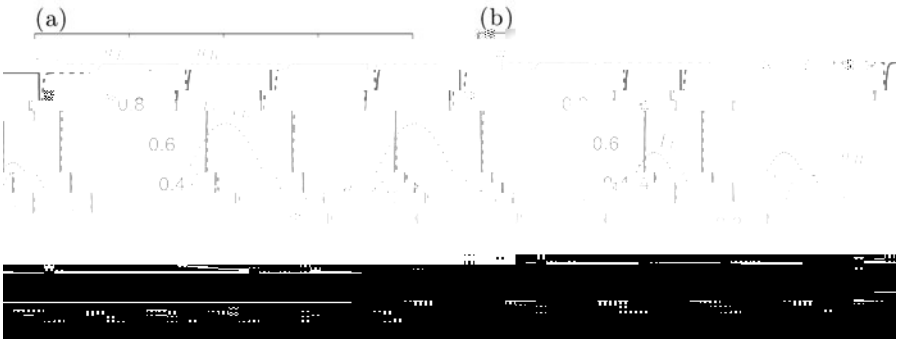
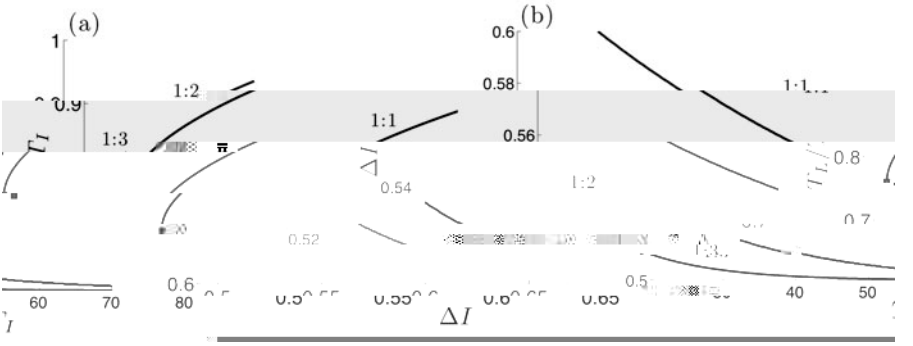


Fig. 12

$$\alpha + I_L(T_\Delta) = a_L(T_\Delta + T_L),$$

$$\underline{\Delta I}$$


(a)
(b)
1:2
1:3
1:1
1:2
0.6
0.58
0.56
0.54
0.52
0.8
0.7
0.6
0.5
60
70
80
40
50
ΔI

ΔI T_I

T_R

$$I\,(T_U + T_L + T_R - T_\Delta) + \alpha = a_R(T_U + T_L + T_R - T_\Delta).$$

$$\frac{\Delta I}{} - \frac{\pi T_\Delta}{T_I} = \varphi \frac{e^{(-\ T_I + T_L + T_U)/\tau} - e^{-\ T_I/\tau}}{- e^{-\ T_I/\tau}},$$

$$\frac{\Delta I}{} \frac{\pi(T_L - T_\Delta)}{T_I} + - \beta = \varphi \frac{e^{(-\ T_I + T_R + T_U)/\tau} - e^{-\ T_I/\tau}}{- e^{-\ T_I/\tau}},$$

$$\frac{\Delta I}{} \pi(T_U + T$$