***One-Hemisphere discrete attractor model***

|  |  |
| --- | --- |
| Parameter | Value |
| $$τ\_{E}$$ | *100 ms* |
| $$τ\_{I}$$ | *0 ms* |
| $$W\_{LL}=W\_{RR}$$ | *5.8* |
| $$W\_{LI}=W\_{RI}$$ | *5* |
| $$W\_{IL}=W\_{IR}$$ | *1.08* |
| $$W\_{LR}=W\_{RL}$$ | *0.9* |
| $$W\_{II}$$ | *2* |
| *During presample* $$I\_{L}^{DC}=I\_{R}^{DC}$$ | *2.27* |
| *During sample and delay* $$I\_{L}^{DC}=I\_{R}^{DC}$$ | *4.27* |
| $$I\_{I}^{DC}$$ | *1* |
| $$I\_{i}^{sel}=N(μ\_{i}^{sel},σ\_{i}^{sel})$$ | $$μ\_{i}^{sel}=0.8,σ\_{i}^{sel}=0.1$$ |
| $$max\left(I\_{I}^{stim}\left(t\right)\right)$$ | [*0, 1, 2, 6*] |
| $$τ\_{f}$$ | *0.8 s* |
| $$τ\_{D}$$ | *0.14 s* |
| $$U$$ | *0.05* |
| $$σ$$ | *9* |

***One-hemisphere negative derivative feedback integrator model***

|  |  |
| --- | --- |
| Parameter | Value |
| $$τ\_{E}$$ | *20 ms* |
| $$τ\_{I}$$ | *10 ms* |
| $$τ\_{LL}=τ\_{RR}=τ\_{LR}=τ\_{RL}$$ | *100 ms* |
| $$τ\_{IL}=τ\_{IR}$$ | *25 ms* |
| $$τ\_{LI}=τ\_{RI}=τ\_{II}$$ | *10 ms* |
| $$W\_{LL}=W\_{RR}=W\_{LR}=W\_{RL}$$ | *150* |
| $$W\_{IL}$$ | *298.5* |
| $$W\_{IR}$$ | *550* |
| $$W\_{LI}$$ | *300* |
| $$W\_{RI}$$ | *301.99* |
| $$W\_{II}$$ | *600* |
| $$I\_{L}^{DC}=I\_{R}^{DC}=I\_{I}^{DC}$$ | *0* |
| *Contra trials* | $$I\_{L}^{sel}=3$$$$I\_{R}^{sel}=0$$ |
| *Ipsi trials* | $$I\_{L}^{sel}=-3$$$$I\_{R}^{sel}=0$$ |
| $$max\left(I\_{I}^{stim}\left(t\right)\right)$$ | [*0, 150, 300, 400*] |
| $$σ\_{ξ}$$ | *5* |
| *Autocorrelation decay time*$$τ\_{noise}$$ | *5 ms* |
| *Noise reduction time const.**(Extended Data Fig. 7l)* | *2 s* |

***Two-Hemisphere discrete attractor model - External ramping input***

|  |  |
| --- | --- |
| Parameter | Value |
| $$τ\_{E}$$ | *100 ms* |
| $$τ\_{I}$$ | *0 ms* |
| $$W\_{LL}=W\_{RR}$$ | *5.8* |
| $$W\_{LI}=W\_{RI}$$ | *5* |
| $$W\_{IL}=W\_{IR}$$ | *1.08* |
| $$W\_{LR}=W\_{RL}$$ | *0.9* |
| $$W\_{II}$$ | *2* |
| $$W\_{C}$$ | *0.8* |
| *During presample* $$I\_{L}^{DC}=I\_{R}^{DC}$$ | *0.9* |
| *End of the delay epoch* $$I\_{L}^{DC}+max(I^{ramp})=I\_{R}^{DC}+max(I^{ramp})$$ | *4.15* |
| $$I\_{I}^{DC}$$ | *1.08* |
| $$I\_{i}^{sel}=N(μ\_{i}^{sel},σ\_{i}^{sel})$$ | $$μ\_{i}^{sel}=1.35,σ\_{i}^{sel}=0.1$$ |
| $$max\left(I\_{I}^{stim}\left(t\right)\right)$$ | [*0, 0.5, 1, 3.5*] |
| $$τ\_{f}$$ | *0.8 s* |
| $$τ\_{D}$$ | *0.14 s* |
| $$U$$ | *0.05* |
| $$σ$$ | *9* |

***Two-Hemisphere discrete attractor model - slow internal dynamics***

|  |  |
| --- | --- |
| Parameter | Value |
| $$τ\_{E}$$ | *100 ms* |
| $$τ\_{I}$$ | *0 ms* |
| $$W\_{LL}=W\_{RR}$$ | *9.75* |
| $$W\_{LI}=W\_{RI}$$ | *2.5* |
| $$W\_{IL}=W\_{IR}$$ | *4* |
| $$W\_{LR}=W\_{RL}$$ | *2.5* |
| $$W\_{II}$$ | *1* |
| $$W\_{C}$$ | *0.4* |
| $$I\_{C}^{DC}=I\_{N}^{DC}$$ | *5.15* |
| $$I\_{I}^{DC}$$ | *1* |
| $$I\_{i}^{sel}=N(μ\_{i}^{sel},σ\_{i}^{sel})$$ | $$μ\_{i}^{sel}=0.4,σ\_{i}^{sel}=0.05$$ |
| $$max\left(I\_{I}^{stim}\left(t\right)\right)$$ | [*0, 1.07, 2.14, 7.5*] |
| $$τ\_{f}$$ | *0.1 s* |
| $$τ\_{D}$$ | *0.12 s* |
| $$U$$ | *0.1* |
| $$σ$$ | *9* |