

Quiz 3.2: Synaptic dynamics

Time scales of synaptic dynamics

0 points possible (ungraded)

所有时间都ok

- ☐ The rise time of a synapse can be in the range of a few millisecond. ✓
- ☐ The decay time of a synapse can be in the range of a few millisecond. ✓
- ☒ The decay time of a synapse can be in the range of a few hundred millisecond. ✓
- ☒ The depression time of a synapse can be in the range of a few hundred millisecond. ✓
- ☒ The facilitation time of a synapse can be in the range of a few hundred millisecond. ✓



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You have used 1 of 1 attempt

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Synaptic dynamics and membrane dynamics 1

0 points possible (ungraded)

Consider the equation

(*) $\frac{dx}{dt} = -\frac{x}{\tau} + c \sum_k \delta(t - t^k).$

With a suitable interpretation of the variable x and the constant c :

- ☒ Eq. (*) describes a passive membrane voltage $u(t)$ driven by spike arrivals. LIF
- ☒ Eq. (*) describes the conductance $g(t)$ of a simple synapse model.
- ☐ Eq. (*) describes the maximum conductance \bar{g}_{syn} of a facilitating synapse. 这个不依赖于别的



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You have used 1 of 1 attempt

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Synaptic dynamics and membrane dynamics 2

0 points possible (ungraded)

Consider the equation

(*) $\frac{dx}{dt} = -\frac{x}{\tau} + (cx - b) \sum_k \delta(t - t^k).$

With a suitable interpretation of the variable x and the constant b and c :

- ☐ Eq. (*) describes a passive membrane voltage $u(t)$ driven by spike arrivals. ✓
- ☒ Eq. (*) describes the maximum conductance \bar{g}_{syn} of a depressing synapse. ✓
- ☒ Eq. (*) describes the maximum conductance \bar{g}_{syn} of a facilitating synapse. ✓



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You have used 1 of 1 attempt

i Answers are displayed within the problem

Discussion

Topic: Week 3 / Quiz 3.2: Synaptic dynamics

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