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Modelling of a neurotransmission

Group 9

Mathematical Modelling

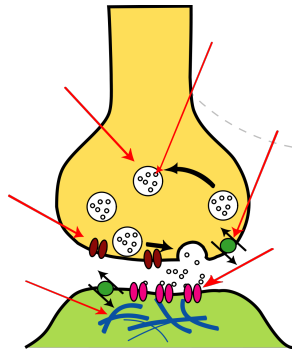
14. November 2014

Modelling equations

$$\frac{dc}{dt} = \kappa \nabla^2 c$$

$$\frac{dc}{dt} = -k_1 c P^R + k_2 (1 - P^R)$$

$$\frac{dP^R}{dt} = -k_1 c P^R + k_2 (1 - P^R)$$

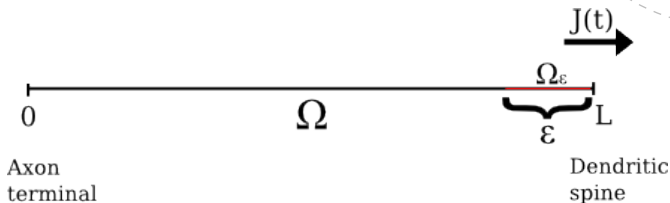


http://en.wikipedia.org/wiki/Chemical_synapse#mediaviewer/File:Synapse_Illustration_unlabeled.svg

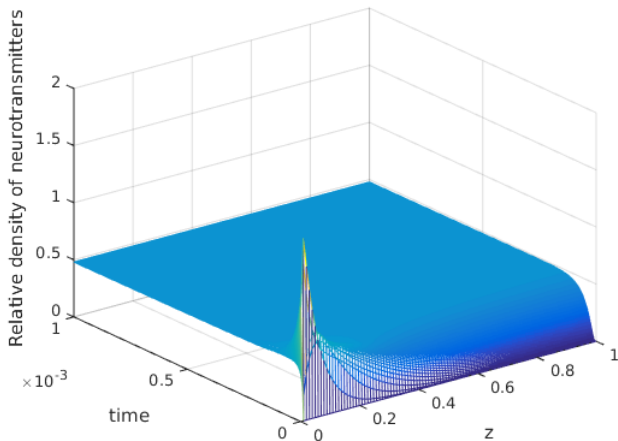


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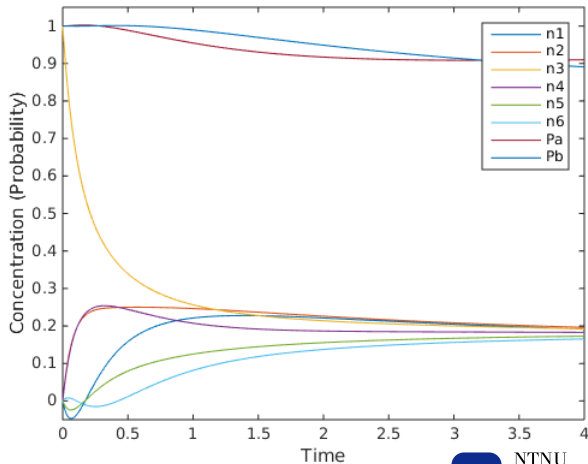
1D Model



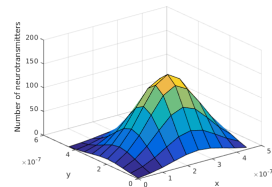
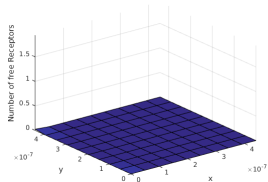
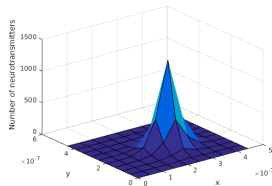
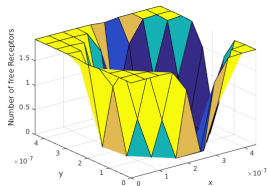
1D distribution over time



1D Model with glia cells

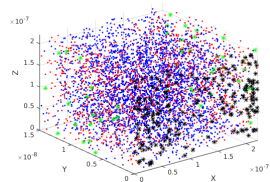
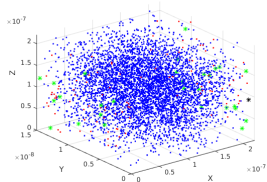
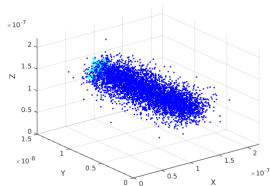
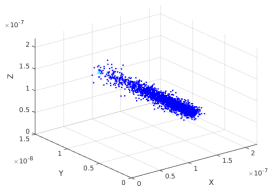


2D Model



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3D Monte Carlo simulation



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