

Formalities: Next week no lecture. There will be a graded assignment to be handed in roughly two weeks.

Last two lectures were Fitzhugh Nagumo model.

Through it: dynamical systems introduction.

Today: On simple models and comparison to data

Response of Fitzhugh Nagumo model to step current. ([http://www.scholarpedia.org/article/FitzHugh-Nagumo\\_model](http://www.scholarpedia.org/article/FitzHugh-Nagumo_model))

Limit cycles

f-I curve.

Looking at data from Allen institute

<http://celltypes.brain-map.org/data>

Doesn't look like FN model. Also – what if we mainly care about spike timing, and not spike shape?

Integrate and fire model

<https://neurondynamics.epfl.ch/online/Ch1.S3.html>

Subthreshold behavior

Analytical calculation of ISI for constant input

Extensions:

Nonlinear subthreshold dynamics.

Adapting threshold

<https://neurondynamics.epfl.ch/online/Ch5.html>

Comparison to data

<https://www.nature.com/articles/s41467-017-02717-4>