

# The dynamics of adaptive neuronal networks: influence of topology on synchronisation

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**DTU Compute**

Department of Applied Mathematics and Computer Science

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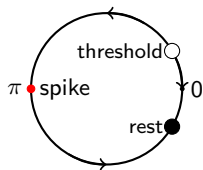
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## Introduction

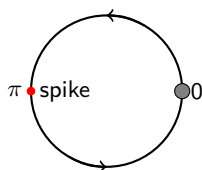
# Introduction

# The Theta Neuron Model

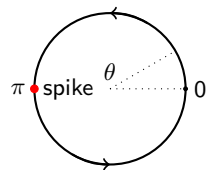
- SNIC bifurcation



Excitable regime:  $I < 0$

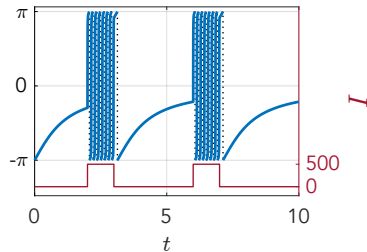
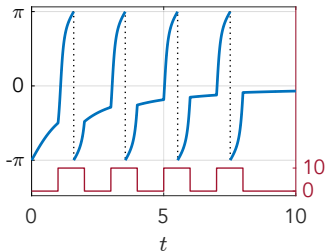
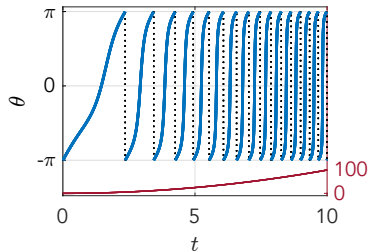


Bifurcation:  $I = 0$

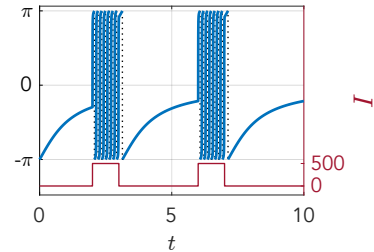
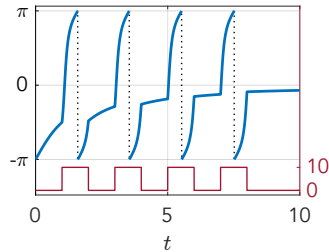
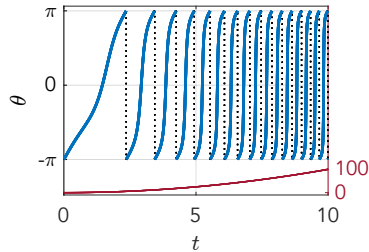


Periodic regime:  $I > 0$

## Features of the model



# The Theta Neuron Model



## Network Topologies

# Network Topologies

# Mean Field Reductions

*Investigation: Mean Field Reductions for undirected graphs*

***Investigation: Mean Field Reductions for undirected graphs***



# Hebbian Learning and Synaptic Plasticity

*Investigation: Emerging Network Topologies*

## ***Investigation: Emerging Network Topologies***

## Conclusion and Discussion