

# Fast Synapsis Hindmarsh-Rose

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## Introduction

This document shows the results from two programs that simulates the fast synapsis between two Hindmarsh-Rose neurons.

## Parameters

The parameters choosed are based on the file “*pract3-15.pdf*” inside the directory **resources/**.

The values  $S_{fast} = 0.44$ ,  $V_{fast} = -1.66$ ,  $E_{syn} = -1.92$  for Hindmarsh-Rose synapsis, are obtained from **Table 2**.

The **Table 3** of the document shows the values of maximal conductance, and we can see that *LP* neuron and *PY* neuron have a both values between them. So neuron1 will be *LP* and neuron2 *PY*, being  $gfast_1 = 0.241$  and  $gfast_2 = 0.186$ .

The rest of the values (*timeincrement*,  $x_{initial}$ ,  $e$ ,  $m$  and  $S$ ) for the model, are the same used on the part 2 of the same document.

## Graphs

On the following pages are the graphs for the different simulations:

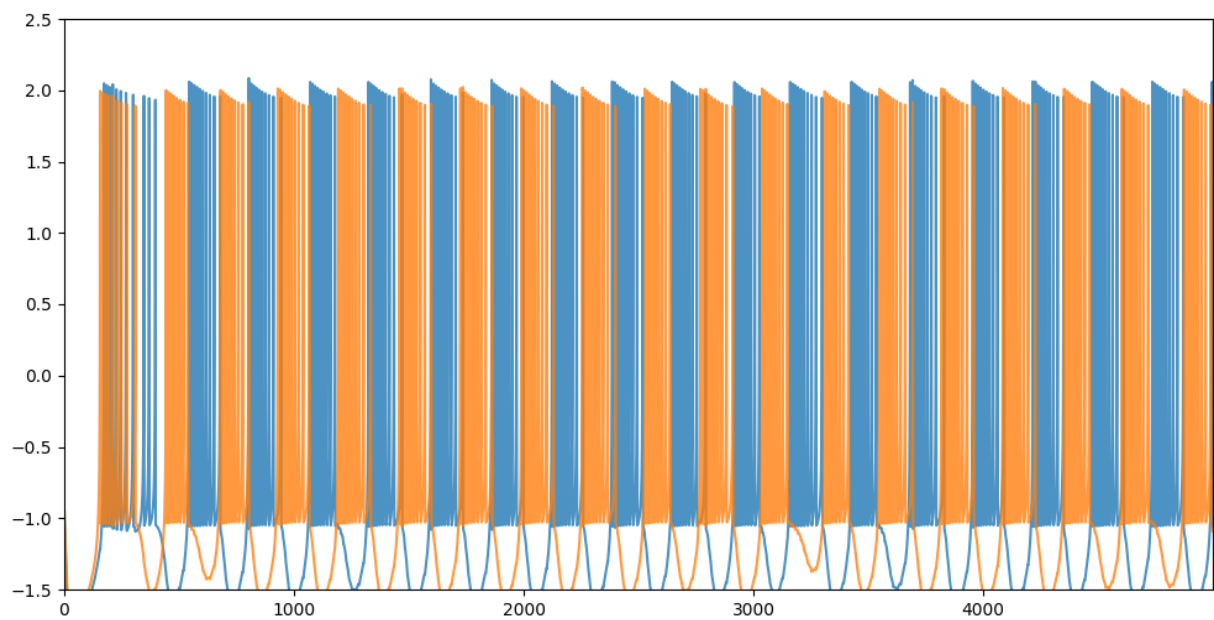


Figure 1: Simulation regular

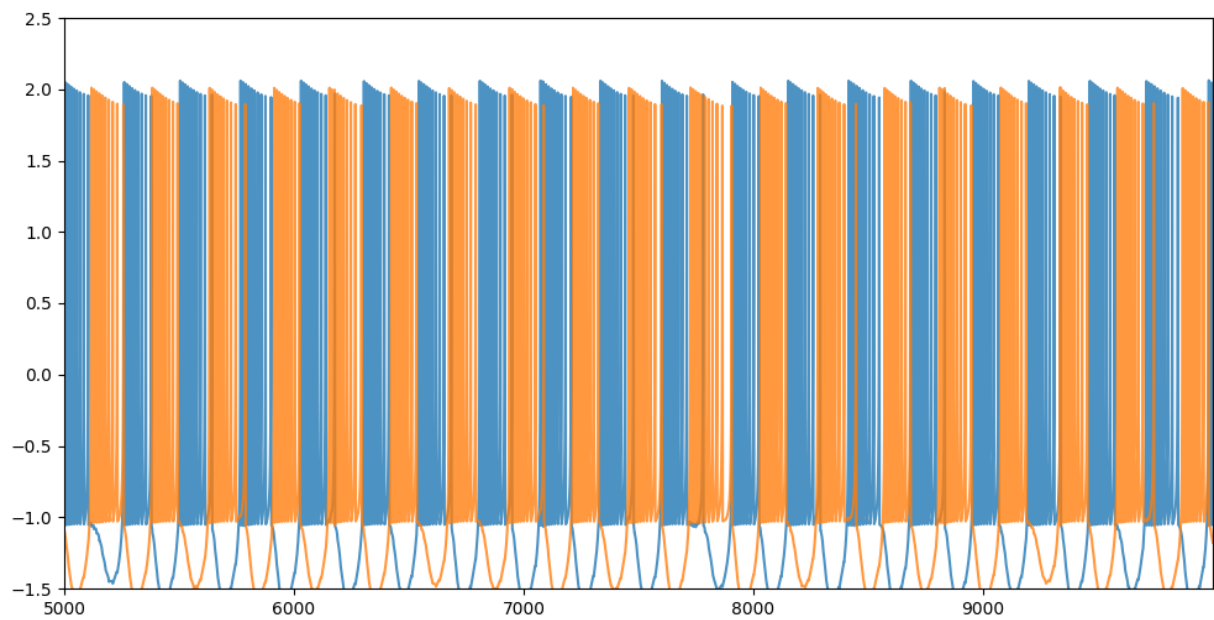


Figure 2: Simulation regular continue

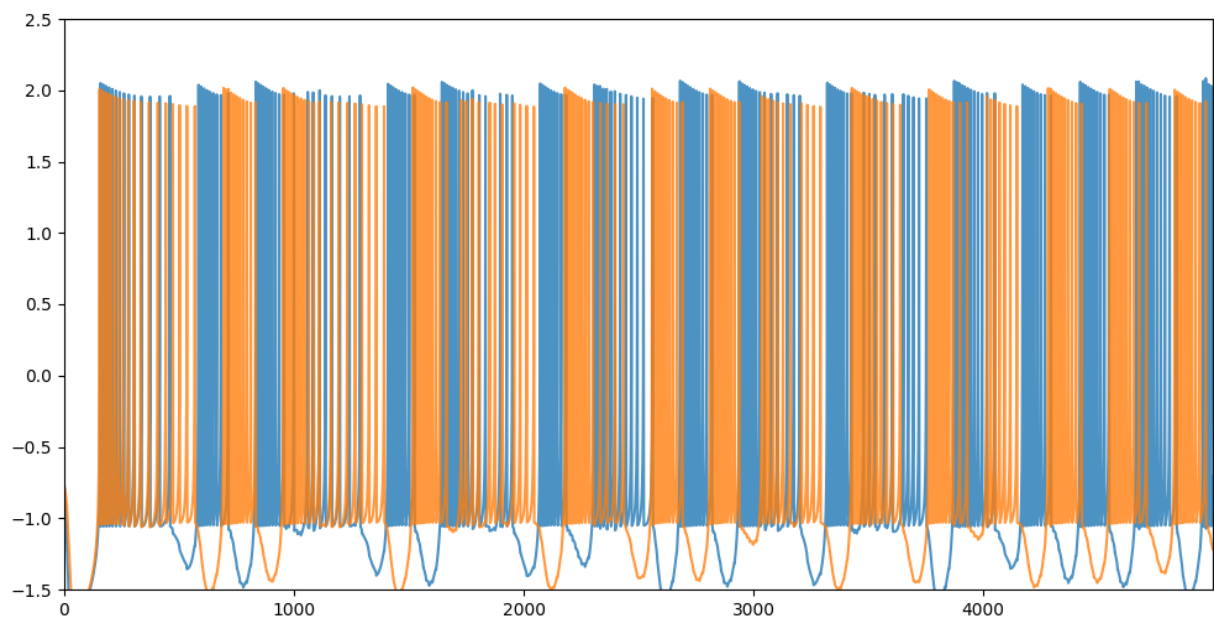


Figure 3: Simulation chaotic

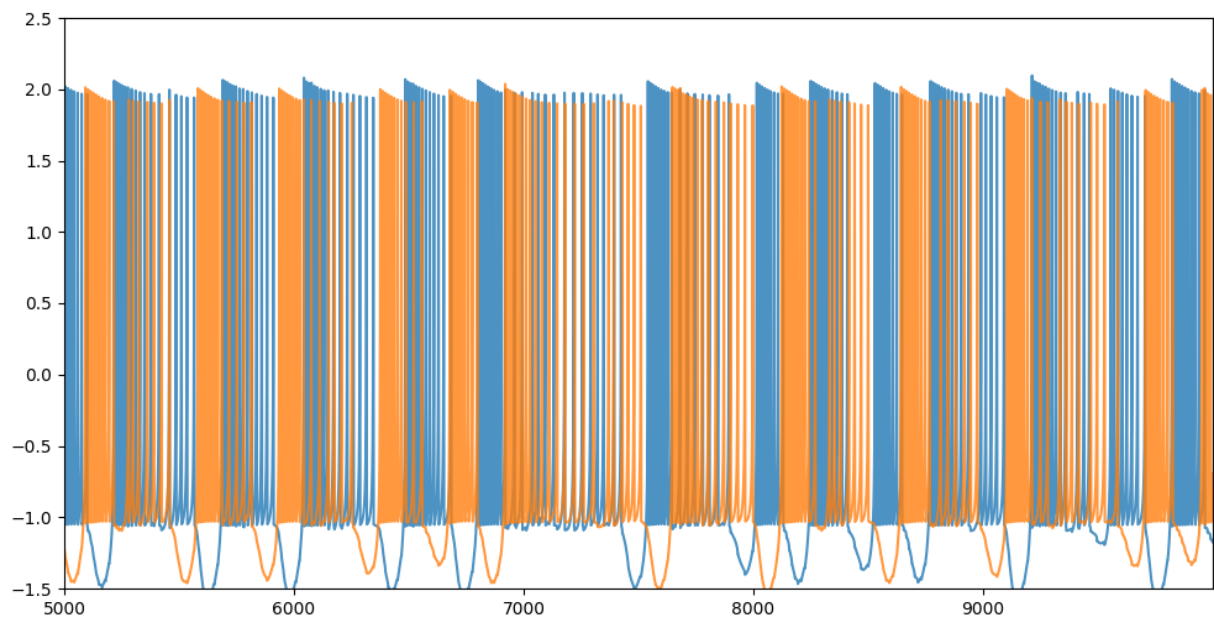


Figure 4: Simulation chaotic continue