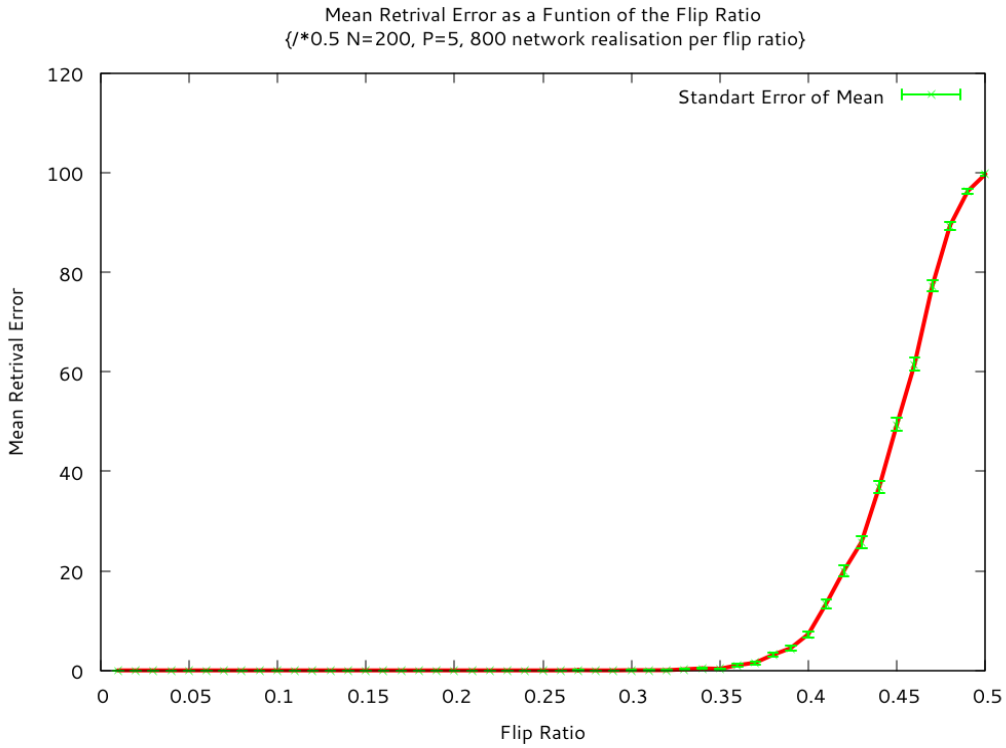
Biological Modeling of Neural Networks

Hopfield Model

Storage of Sequences of patterns in asymetric hopfield networks with delayed synapses

Miryam Chaabouni
Joseph Lemaitre

Figure 1: $g(r)$ for 10K steps



1 Exercise 1

1.1 Exercise 1.1

1.2 Exercise 1.2

N	100	250	500
P_{max}	17	39	
α_{max}	0.17	0.156	–
α_{th}	–	–	–

2 Exercise 2

2.1 Exercise 2.2

We used the heaviside filter function. We had a bit of freedom to define *sequencial behaviour. We decreased lambda to get the minimum value for which all pattern are visited. We found :*

$$\lambda_{min} \approx 0.9$$

For values below this one, the network get stuck in a particular pattern. Due to the random generation of some variables, the value of λ_{min} *is approximative.*

For the calculus of λ_{max}*, we saw that for high lambda the network jump over some frame, not getting an overlap of one. Therefore we defined the sequencial behaviour as all state are visited with a overlap of 1, one after each other. We found :*

$$\lambda_{max} = 3.6$$

2.2 Exercice 2.3