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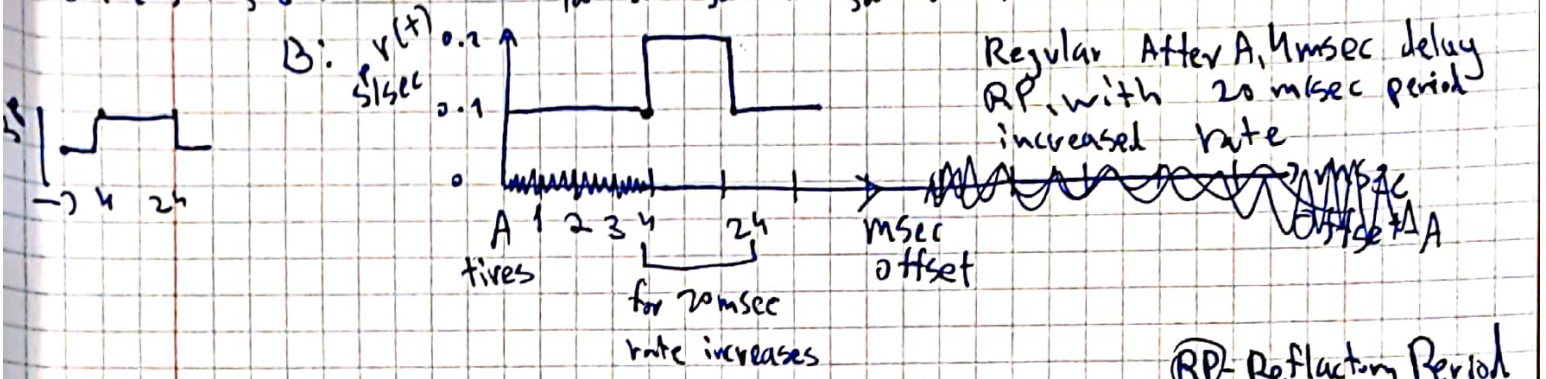
Assignment 03

due: 30.4.20

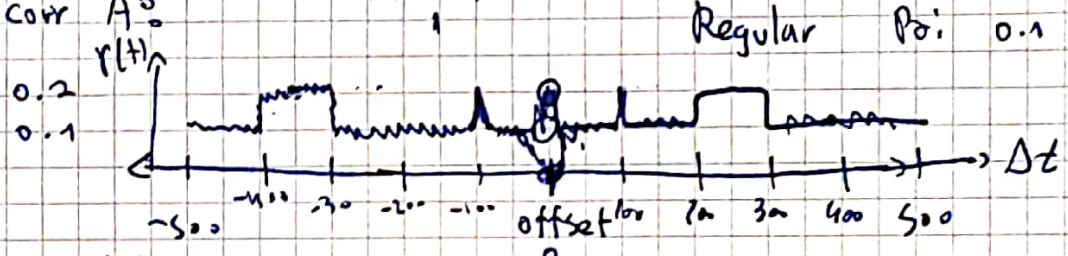
① A:

B:

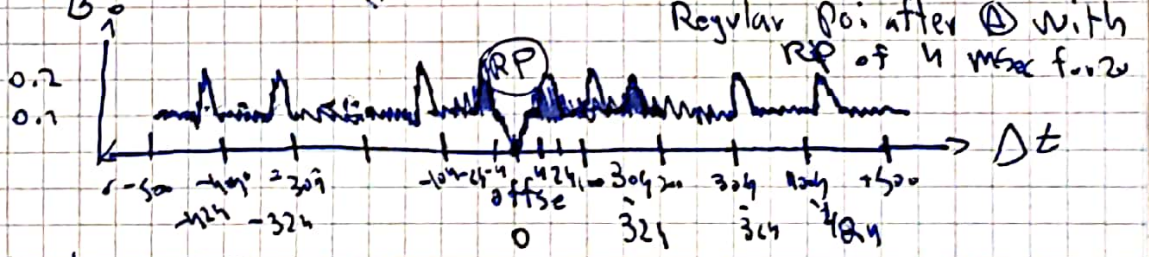


RP - Reflacting Period

⑥ a) Autocorr A:

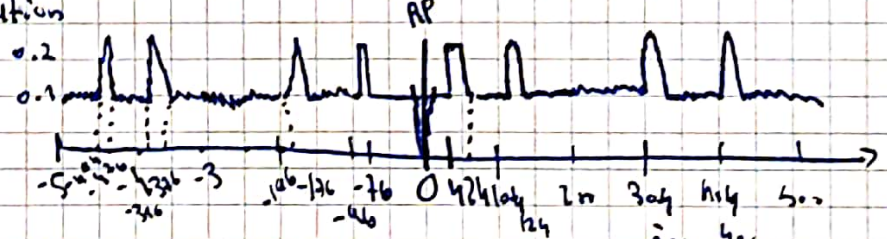


B:



⑥ b) Cross Correlation

A → B



④ Starting point: 4 msec − 0 = 4 msec

→ Starting point: 24 msec − 100 msec = −76 msec

end

} from each we take 20msec with a elevated phase. (0.1 → 0.2) and then back to regular (0.1)

at zero, Autocorr 0.

The neurons are regular with changing phase of 0.1 sp/s to 0.2 sp/s.

B has RP of 4 msec and elevated phase for 20msec.

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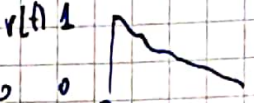
② If A&B fire only after C, then:

Cross corr A&B → zero! no corr, only if C fires
A&C → some dependence
B&C → some dependence.

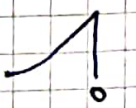
After C spike $P(sp)=1$.

else, there is some prob for the other to be correlated.

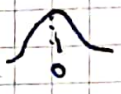
a) $C \to A$, $C \to B$ } $P(sp)=1$ right peak! off zero



$A \to C$, ~~$B \to C$~~ } $0<P(sp)<1$ Left peak ~~negative~~ ~~around~~ zero

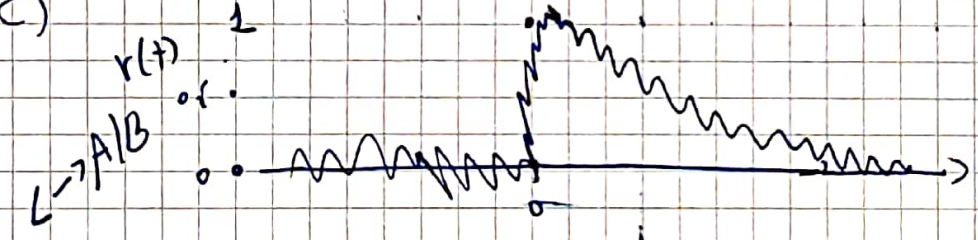


$A \to B$ } $P(sp) \approx 0$ ∴ trough, around zero



b) See file ass_2b.py + ass3_ex2b.png.

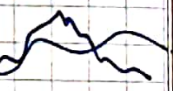
c)



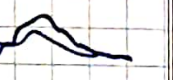
See file ass_2b.py and ass3ex2c.png.

I made a simulation where C is a regular neuron with avg fire rate of 2 sp/sec, followed by 2:

B: with 5.1 sp/sec Regular After C



A: with 3 sp/sec Regular after C



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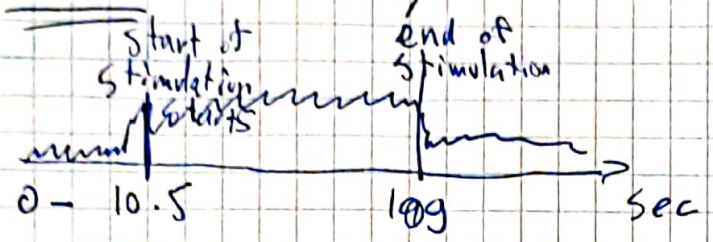
③ a- 229 sp/sec Avg rate

b- 1 sec sample → 0.833 sp/sec Avg

c- in fig we see that the firing rate increases while having stimulation.



spTime 2758 x1
[0.02, ..., 119.98]
file = ass_3
fig = ass3eB
stimTime 100 x1
[10.5, 11.5 ... 109.5]

d- The stimulus excites the neuron?

t_1 = 0 - 10.5 sec Avg rate before stimulus : 21.5 sp/s

t_2 = 10.5 - 109.5 sec Avg rate during " : 23.6 sp/s

t_3 = 109.5 - 120 Avg rate after " : 18.38

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