

Dendrites and Diffusors

Reference as mentioned on the site. Please read the website.

- Starting work on dendrites and diffusors on reconfigurable chips: <http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=4253399>
- Thesis of Arindam has a good description on the dendrite model which were discussed in the class. I would highly recommend to look at section 5.4: http://users.ece.gatech.edu/phasler/ECE6435/theses/basu_arindam_201005_phd.pdf.

Figure 40 is what we would expect you to have for the starting plots.

- Ethans thesis on dendrite (Section 4.2).

http://users.ece.gatech.edu/phasler/ECE6435/theses/farquhar_ethan_d_200512_phd.pdf.

We would expect your videos will have explanation of what the dendrite is and why the output looks like that and what are the dynamics.

Dendrite block to be used Dendrite4x4.



Input are at the source of floating gate which acts like a current input. The input should be something like this.

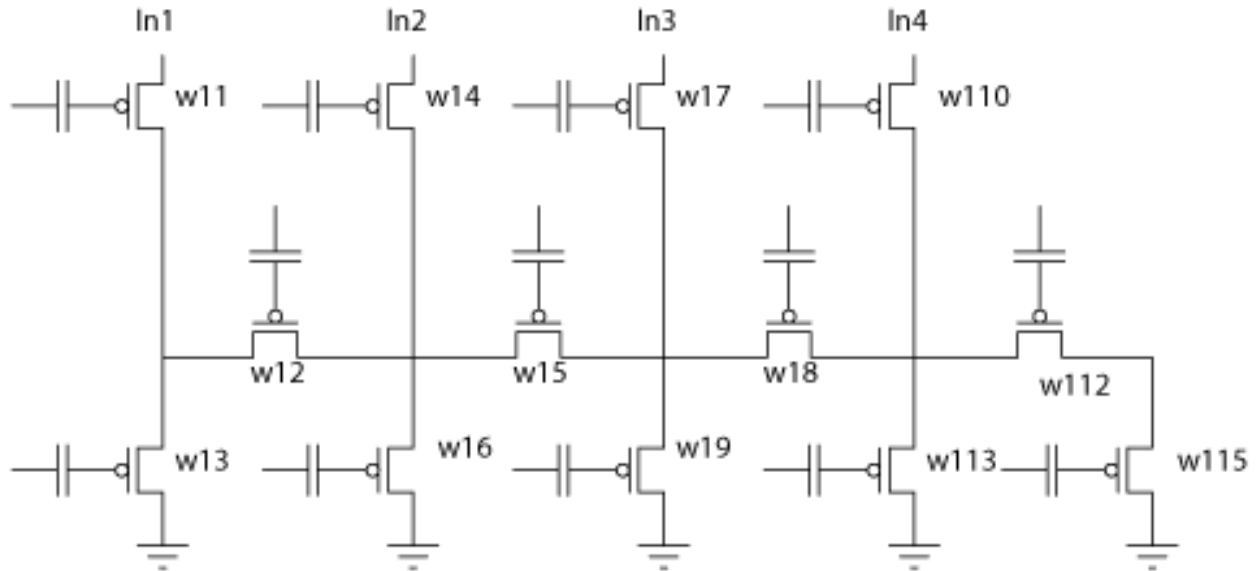
```
myvariable = [linspace(2.1,2.2,90) linspace(2.2,2.1,400) linspace(2.1,2.1,10)
linspace(2.1,2.2,90) linspace(2.2,2.1,400) linspace(2.1,2.1,10)]
```

The matrix is just an example you will have to set the currents and conductance of the channels and tune them. Leave the two 2.000D-11 weights as it is.

The current vector corresponds to the dendrites as follows.

```
[0.0000002,0.0000002,0.0000002,0.0000002,0.0000002,0.0000002,0.0000002,0.0000002,0.0000002,0.0000002,2.000D-11,0.0000002,0.0000002,2.000D-11,0.0000002] =
[w11,w12,w13,w14,w15,w16,w17,w18,w19,w110,w111,w112,w113,w114,w115]
```

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Since the Excitatory Postsynaptic Potentials are few mV you will have to amplify it using an open loop FGota. Also there will be offset mismatch between the FGota so you will have to tune them by changing the N and P bias of the FGota.