
| language/format | time (s) |
|-----------------|----------|
|-----------------|----------|

Object-oriented Python

as above, with Psyco

Octave

Numpy Python + BRAHMS

Numpy Python

Pyrex

Matlab

Raw C

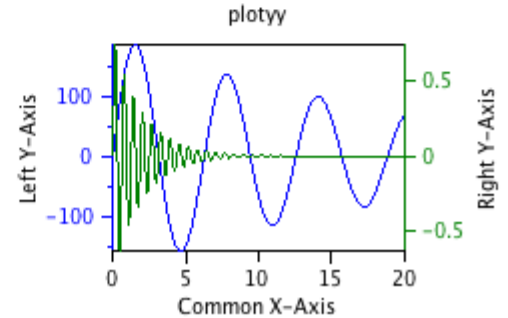
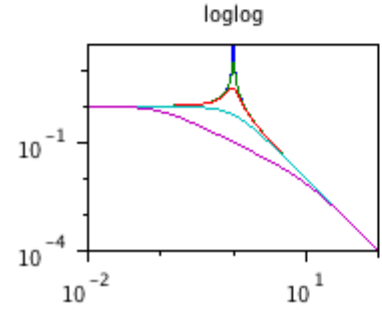
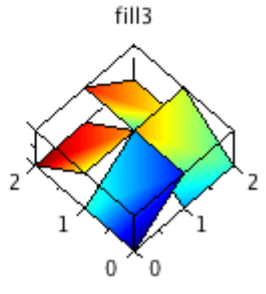
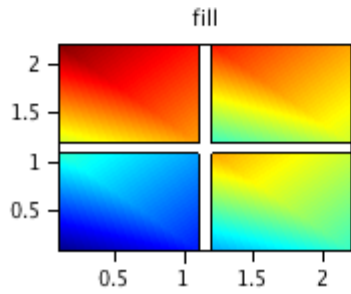
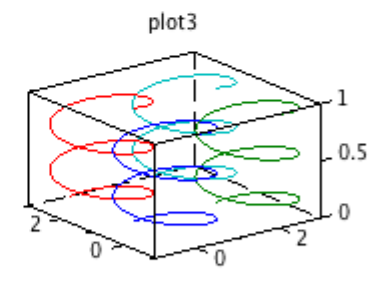
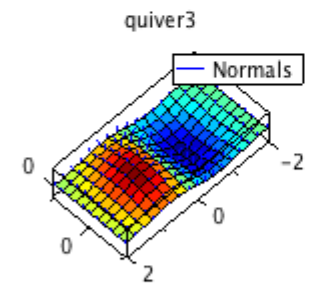
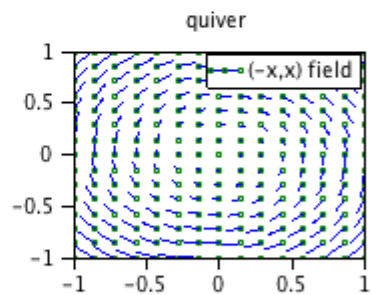
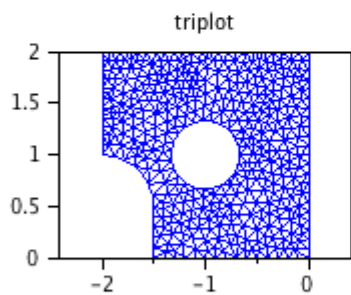
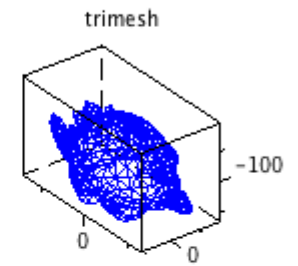
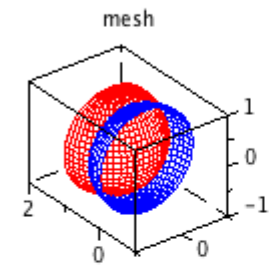
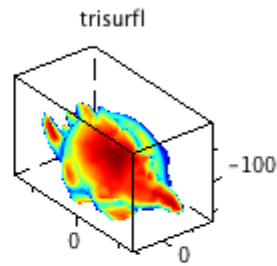
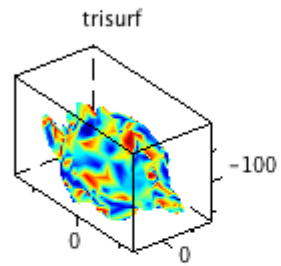
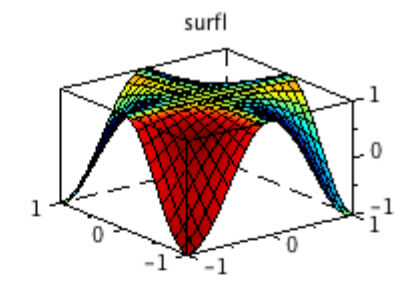
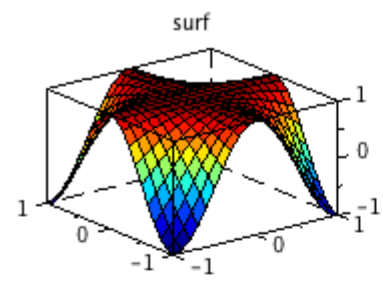
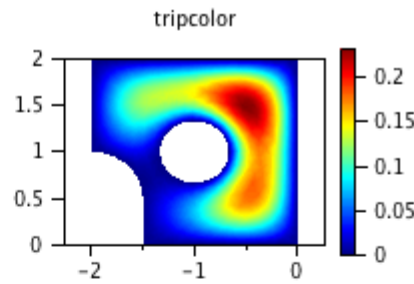
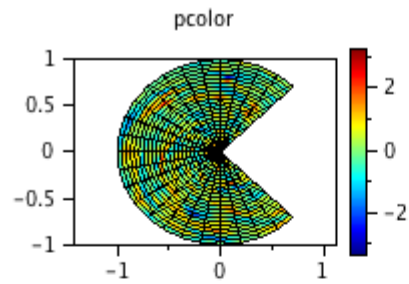
| language/format | time (s) |
|------------------------|----------|
| Object-oriented Python | 66.1 |
| as above, with Psyco | 48.6 |
| Octave | 1.31 |
| Numpy Python + BRAHMS | 0.89 |
| Numpy Python | 0.82 |
| Pyrex | 0.22 |
| Matlab | 0.21 |
| Raw C | 0.04 |

```

9 void DO_step(void)
10 {
11     int8_T sf_j;
12     int8_T sf_i;
13     int8_T sf_k;
14     int32_T sf_exitg;
15     int32_T sf_exitg_0;
16     sf_i = 9;
17     sf_j = 9;
18     sf_k = 9;
19     y_l[99] = 0;
20     do {
21         sf_exitg = 0;
22         do {
23             sf_exitg_0 = 0;
24             do {
25                 y_l[sf_i + 10 * sf_j] = u_1[10 * sf_k + sf_i] * u_2[10 * sf_j + sf_k] +
26                 y_l[10 * sf_j + sf_i];
27                 sf_k--;
28             } while (sf_k >= 0);
29
30             sf_j--;
31             if (sf_j >= 0) {
32                 sf_k = 9;
33                 y_l[sf_i + 10 * sf_j] = 0;
34             } else {
35                 sf_exitg_0 = 1;
36             }
37         } while ((uint32_T)sf_exitg_0 == 0U);
38
39         sf_i--;
40         if (sf_i >= 0) {
41             sf_j = 9;
42             sf_k = 9;
43             y_l[90 + sf_i] = 0;
44         } else {
45             sf_exitg = 1;
46         }
47     } while ((uint32_T)sf_exitg == 0U);
48 }

```

Scilab



SciPad 7.18.1 - Untitled1.sce (modified)

File Edit Search Execute Scheme Options Windows Help

```
1 // Example of a single FOR-loop
2 n=100; for k = 1:n, a(k) = sqrt(k); end;
3
4 // Same but written in three lines
5 for k = 1:n
6   b(k) = sqrt(k);
7 end;
8
9 // Example of a double FOR-loop
10 for j = 1:n, for k = 1:n, c(j,k) = j+k; d(j,k) = 5*c(j,k); end; end;
11
12 // Same but written in several lines
13 for j = 1:n,
14   for k = 1:n,
15     c(j,k) = j+k;
16     d(j,k) = 5*c(j,k);
17   end;
18 end;
19
20 // simplified array manipulation without loop
21 d = 5*c; // multiplies each element by 5
```

Line: 20 Column: 1

Logical line: 20



NEURON

for computer simulations of neurons and neural networks

RunControl

Close Hide

Init (mV)

Init & Run

Stop

Continue til (ms)

Continue for (ms)

Single Step

t (ms)

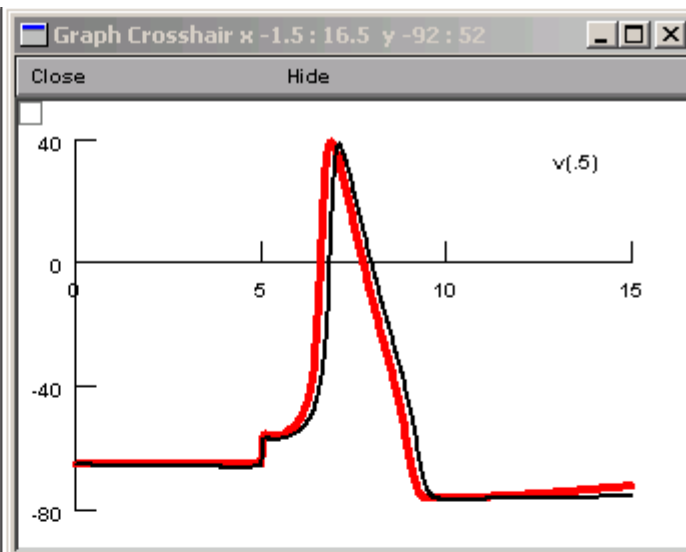
Tstop (ms)

dt (ms)

Points plotted/ms

Scrn update invl (s)

Real Time (s)



<https://www.neuron.yale.edu/>

With model database!

PointProcessManager

Close Hide

SelectPointProcess

Show

Iclamp[0]

at: soma(0.5)

Iclamp[0]

del (ms)

dur (ms)

amp (nA)

i (nA)

Sin...

Close Hide

soma

pas

hh

mykhh

soma(0 - 1) (Parameters)

Close Hide

soma(0 - 1) (Parameters)

nseg = 1

L (um)

Ra (ohm-cm)

diam (um)

cm (uF/cm2)

gnabar_hh (S/cm2)

gkbar_hh (S/cm2)

gl_hh (S/cm2)

el_hh (mV)

ena (mV)

gmax_mykhh (S/cm2)

ek (mV)

ChannelBuild[0]

Close Hide

Properties

mykhh Density Mecha

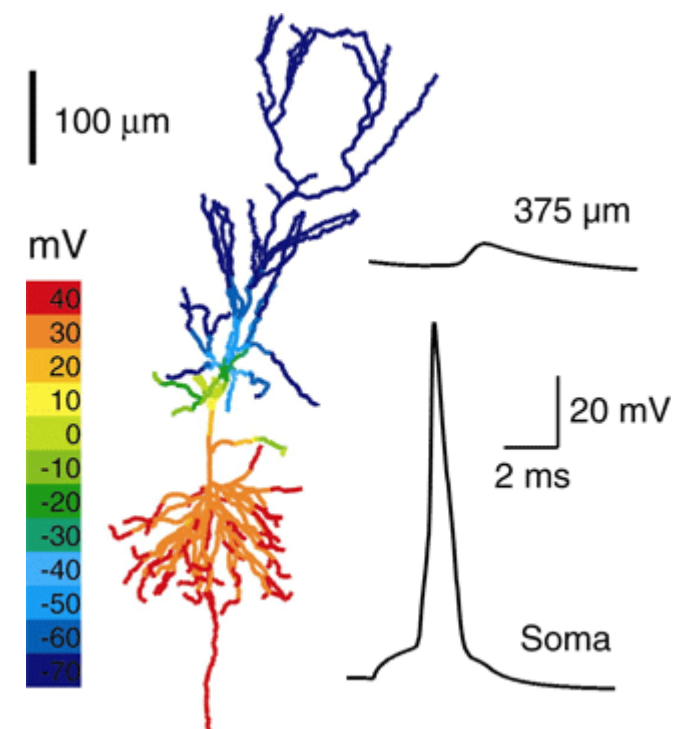
k ohmic ion current

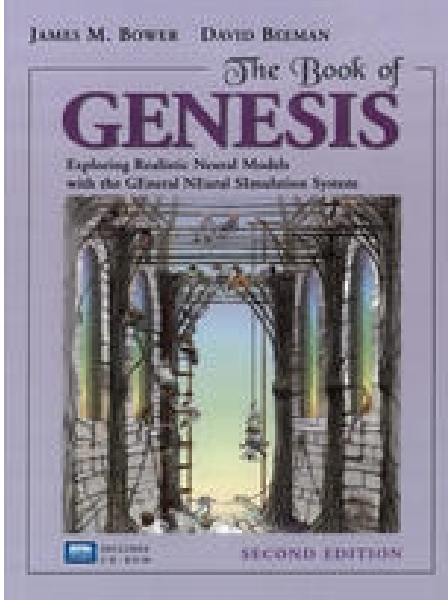
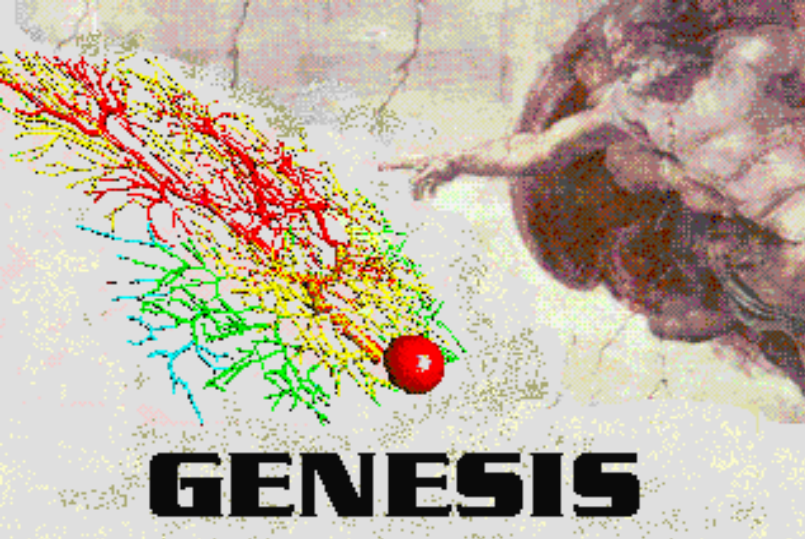
i k (mA/cm2) = g_my

g = gmax * D

Default gmax = 0.02979

0: 3 state, 2 transiti





<http://www.genesis-sim.org/>

| |
|-------------------------------|
| CONTROL PANEL |
| RESET RUN STOP QUIT |
| RUNID string: 0005 |
| dt (sec) 5e-05 |
| Overlay OFF |
| Connection Parameters |
| synchan gnax (S) 1.5e-09 |
| Height 10 Delay 0.002 |
| Stimulation Parameters |
| Current Injection ON |
| Lower Left = 0; Center = 495 |
| Inject Cell: 0 |
| Injection (Amp) 1e-09 |
| Delay (sec) 0 |
| Width (sec) 0.05 |
| Interval (sec) 1 |
| Random background activation |
| Frequency (Hz) 0 |

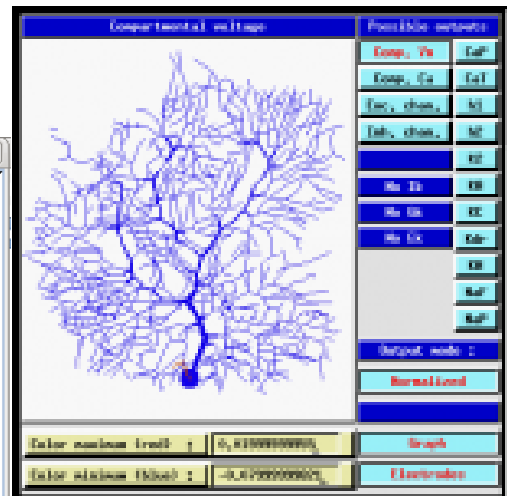
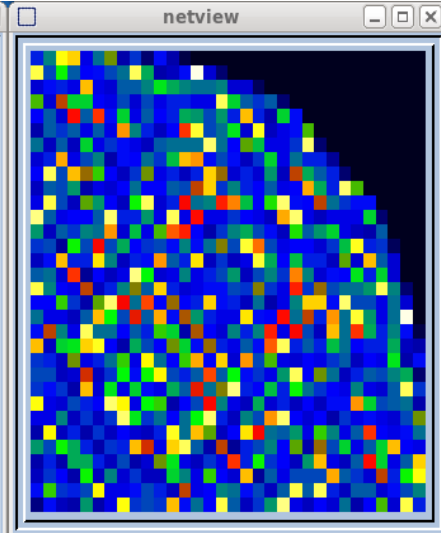
Network of simplified cortical pyramidal cells

scale

Membrane Potential

V

center 495
L edge 480
LL corner 0



Simulation control

RUN STOP CLEAR QUIT

Time (ms) : 500

Output rate : 10

Simulation time (s) : 0.001

Simulation mode

In File: No settings

Current injection on: Settings

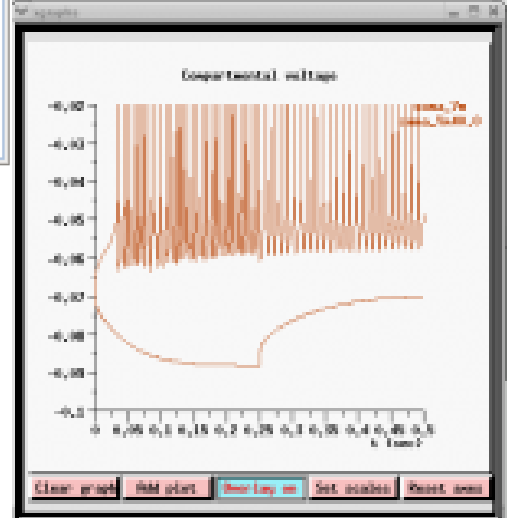
Normalize parallel fibers: Settings

Normalize basket cells: Settings

Normalize climbing fiber: Settings

Simulation Information

Help Credits



Current clamp settings

Level (A) : 0.0

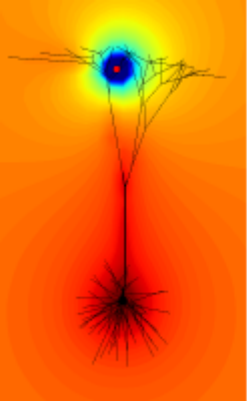
Current pulses

Pulse amplitude (A) : 1.0

Pulse width (ms) : 500

Pulse period (ms) : 500

Done

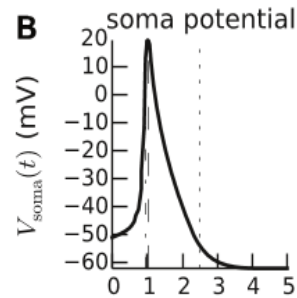
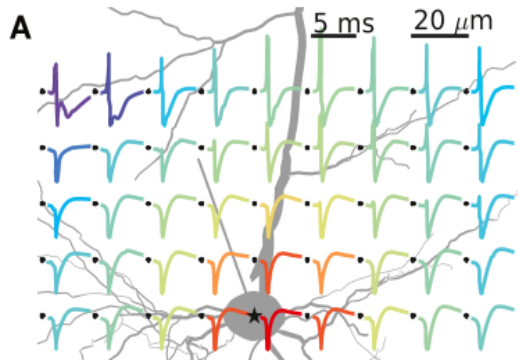


LFPy

Local Field Potentials in Python

<http://compneuro.umb.no/LFPy>

Uses Neuron models



C extracellular spike
synaptic current (pA)

