

LinearMGap.hoc

~/code/neuron/al_V2/src/singlecmpt_test/

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1  begintemplate LinearMGap
2  public src, target, g, valid, pr, set_gm, gm, cm
3  objref srcsec, targetsec, cm, gm, y, b, xvec, sl, lm, this, fih
4  strdef tstr
5
6  proc init() {
7      g_ = 10
8      valid_ = 0
9      cm = new Matrix(2,2,2)
10     gm = new Matrix(2,2)
11     y = new Vector(2)
12     b = new Vector(2)
13     xvec = new Vector(2)
14 }
15
16 func src() {
17     srcsec = new SectionRef()
18     xvec.x[0] = $1
19     valid_ = 0
20     return valid()
21 }
22
23 func target() {
24     targetsec = new SectionRef()
25     xvec.x[1] = $1
26     valid_ = 0
27     return valid()
28 }
29
30 func g() {
31     if (numarg() > 0) {
32         g_ = $1
33         if (valid_) {
34             set_gm()
35         }
36     }
37     return g_
38 }
39
40 proc set_gm() { local us, a // conductance in nanosiemens
41     if (valid_ == 0) { return }
42     us = .001*g_
43     srcsec.sec { a = 100/area(xvec.x[0]) }
44     gm.x[0][0] = us*a
45     gm.x[0][1] = -us*a
46     targetsec.sec { a = 100/area(xvec.x[1]) }
47     gm.x[1][1] = us*a
48     gm.x[1][0] = -us*a
49 }
50
51 func valid() {
52     if (valid_ == 0) {
53         if (object_id(srcsec) && object_id(targetsec)) {
54             mkgap()
55         }
56     }
57     return valid_
58 }
59
60 proc mkgap() {
61     sl = new SectionList()
62     srcsec.sec sl.append()
63     targetsec.sec sl.append()
64     valid_ = 1
65     set_gm()
66     lm = new LinearMechanism(cm, gm, y, b, sl, xvec)
67     // only necessary because we anticipate changes in diameter
68     // fih = new FInitializeHandler(0, "set_gm()")
69     // unfortunately up through the 5.6 2004/02/09 Main (44)
```

```
70     // version there is an error in parsing the third arg, so
71     sprintf(tstr, "%s.set_gm()", this)
72     fih = new FInitializeHandler(0, tstr)
73 }
74
75 proc pr() {
76     if (valid_) {
77         srcsec.sec printf("%s %s(%g)", this, secname(), xvec.x[0])
78         targetsec.sec printf("----%s(%g) \tg = %g (ns)\n", secname(), xvec.x[1], g(
79         ))
80     } else {
81         printf("%s not used\n", this)
82     }
83 }
84
85 endtemplate LinearMGap
end
```