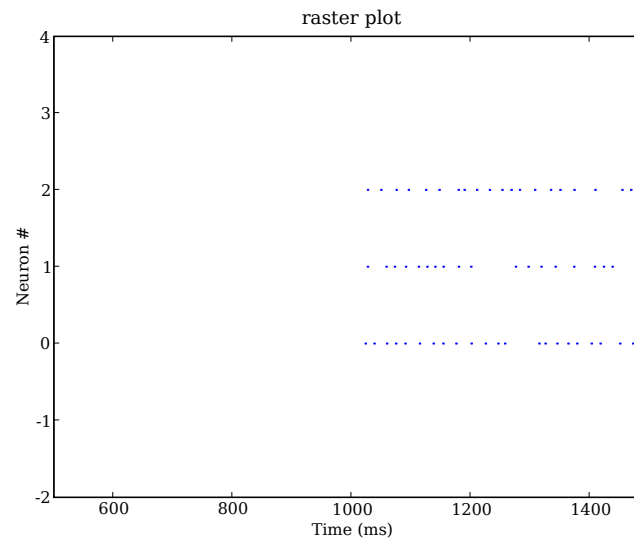


## NeuroTools.signals

```
1 import pylab, numpy
5 import NeuroTools.signals as signals
    loading spiking data
9
10 s = signals.load_spikelist('spike_data')
    ----- Dependency Warning -----
    ** interval ** package is not installed.
    To have functions using interval please install the package.
    website : http://pypi.python.org/pypi/interval/1.0.0
    ----- Dependency Warning -----
    ** psyco ** package is not installed.
    To have functions using psyco please install the package.
    website : http://psyco.sourceforge.net/
raster plot
12 s.raster_plot(display=True)
13 pylab.title('raster plot')
14 pylab.xlim(500,1500.)
15 pylab.show()
```



mean rate

```
18 print 'mean rate: ', s.mean_rate()
```

mean rate: 41.6313831135

```
20 print 'mean rates: ', s.mean_rates()
```

mean rates: [42.1141734618, 41.3342813607, 41.445694518]

fano factor of isi

```
23 print 'fano factor of isi: ', s.fano_factors_isi()
```

fano factor of isi: [4.73104308936, 3.65703599646, 4.38302691115]

cv of isi

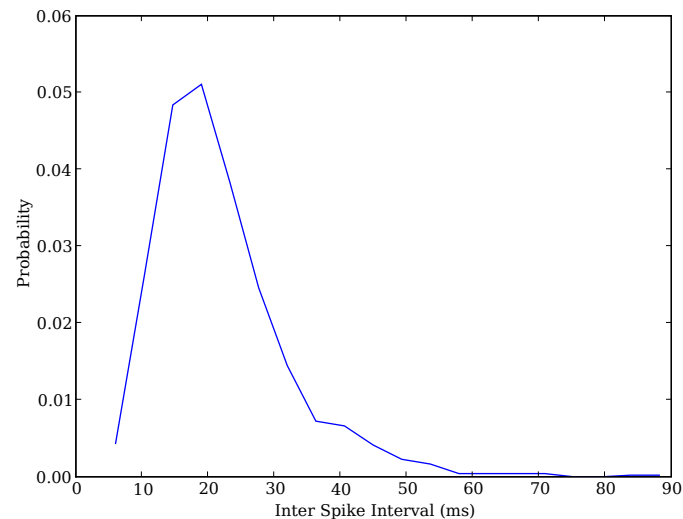
```
26 print 'cv of isi: ', s.cv_isi()
```

cv of isi: [ 0.4457767 0.38838027 0.42586527]

isi distribution

```
28 hs = s.isi_hist(bins=20, display=True)
```

29 `pylab.show()`



many more functions

33 `print dir(signals.SpikeList)`

```
['_SpikeList__calc_startstop', '_SpikeList__sub_id_list', '__class__', '__delattr__', '__dict__',
 '__doc__', '__getattr__', '__getitem__', '__getslice__', '__hash__', '__init__', '
__iter__', '__len__', '__module__', '__new__', '__reduce__', '__reduce_ex__', '__repr__', '
__select_with_pairs__', '__setattr__', '__setitem__', '__str__', '__weakref__', 'activity_map',
'activity_movie', 'append', 'complete', 'concatenate', 'convert', 'copy', 'cv_isi', '
cv_isi_hist', 'cv_kl', 'cv_local', 'distance_kreuz', 'distance_victorpurpura', 'flf0_ratios',
'fano_factor', 'fano_factors_isi', 'firing_rate', 'first_spike_time', 'id2position', '
id_list', 'id_offset', 'id_slice', 'interval_slice', 'isi', 'isi_hist', 'last_spike_time', '
mean_rate', 'mean_rate_covariance', 'mean_rate_std', 'mean_rate_variance', 'mean_rates', '
merge', 'pairwise_cc', 'pairwise_cc_zero', 'pairwise_pearson_corrcoeff', 'position2id', 'psth',
'raster_plot', 'rate_distribution', 'raw_data', 'save', 'select_ids', 'spike_histogram', '
time_axis', 'time_offset', 'time_parameters', 'time_slice']
```

loading voltage data

```
36 v = signals.load_vmlist('vm_data')
```

plot all the signals

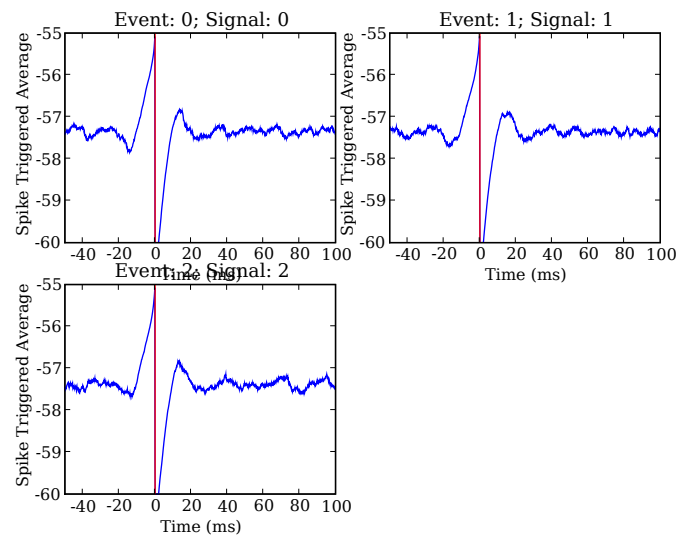
```
38 v.plot(display=True)
39 pylab.title('all membranes')
40 pylab.xlim(500,1500.)
41 #pylab.show()
```

plot only one AnalogSignal

```
44 v[1].plot(display=True)
45 pylab.title('only one membrane')
46 pylab.xlim(500,1500.)
47 #pylab.show()
```

spike triggered averages

```
50 v.event_triggered_average(s,t_min=50.,display=True)
51 pylab.show()
```



many more functions

54

```
print dir(signals.AnalogSignal)
```

```
['__class__', '__delattr__', '__dict__', '__doc__', '__getattr__', '__getslice__', '__hash__', '__init__', '__len__', '__module__', '__new__', '__reduce__', '__reduce_ex__', '__repr__', '__setattr__', '__str__', '__weakref__', 'copy', 'duration', 'event_triggered_average', 'interval_slice', 'max', 'mean', 'min', 'plot', 'slice_by_events', 'threshold_detection', 'time_axis', 'time_offset', 'time_parameters', 'time_slice']
```