

SimpleRandomPlots

October 18, 2017

1 Some randomness and plotting

Some setup code first

```
In [1]: import numpy as np
import scipy.stats
from pprint import pprint as pp
%matplotlib notebook
from matplotlib import pyplot as plt
```

1.1 Real-valued samples

```
In [4]: n = 10000
samples = np.random.normal(0, 1, size=n)
pp(samples[1:10])

array([-0.90880094, -0.40347313,  0.52990921,  0.12725852, -1.26569024,
        0.07517465,  1.98670215,  1.5367881 , -1.13467584])
```

```
In [6]: plt.figure()
nbins, bins, l = plt.hist(samples, bins=40)
plt.plot(bins, max(nbins)*scipy.stats.norm.pdf(bins), 'y')
plt.show()
```

<IPython.core.display.Javascript object>

<IPython.core.display.HTML object>

```
In [7]: plt.figure()
nbins, bins, l = plt.hist(samples, bins=40, normed=True)
plt.plot(bins, scipy.stats.norm.pdf(bins), 'r')
plt.show()
```

<IPython.core.display.Javascript object>

<IPython.core.display.HTML object>

1.2 Complex random

```
In [11]: cn=100000
         csamples = np.random.normal(0, 1, size=cn) + complex(0, 1)*np.random.normal
```

```
In [9]: plt.figure()
         plt.scatter(np.real(csamples), np.imag(csamples))
         plt.show()
```

<IPython.core.display.Javascript object>

<IPython.core.display.HTML object>

```
In [12]: plt.figure()
         plt.hist2d(np.real(csamples), np.imag(csamples), bins=50)
         plt.axes().set_aspect('equal', 'datalim')
         plt.show()
```

<IPython.core.display.Javascript object>

<IPython.core.display.HTML object>