

Physics 503: Scientific Computing ~ Homework #01

Topic: Basic skills in python and plotting with matplotlib & pyplot

Due: Friday Feb 9 by midnight

Assignment

Write functions to:

1. generate a list of N random numbers with a Gaussian distribution.
(use the random module)
2. compute the standard deviation of those numbers.
3. generate a histogram of a list of numbers.
(args-> list of numbers, bin size, optional -> low and high cutoffs)

- Document all functions with doc strings!!
- You MAY NOT use the built in histogram functions in pylab (or other packages).
- Write the histogram data to a tab delimited text file for 4 different lists with different standard deviations, but the same number of total points and same average value.
(This could be 4 different files or 1 file with multiple columns)
- You MAY use the built in “np.savetxt” and “np.loadtxt” functions in pylab.
- Plot the 4 histograms with different colors on one plot. Include x and y labels, a title, and a legend indicating the appropriate stdev.