"Random walk Simulation in 2-dimensional space"

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Random-walk problem have been one of the fundamental problems in statistical analysis with a wide range of application ranging from approximating the value of π to analysis of flying flock of birds. In this problem, random walk simulation on a 2-dimensional plane with fixed size of step and uniform probability distribution for random numbers was carried out. Running random walk code 100 times for different step numbers in each walk was carried out and average displacement and RMS radial distance at the end of walk was calculated. To verify the result of $R_{rms} \propto \sqrt{N}$, R_rms versus $\sqrt{(N)}$ was plotted. In the random walk plots, it can be observed that the curve starts becoming highly dense as N is increased.
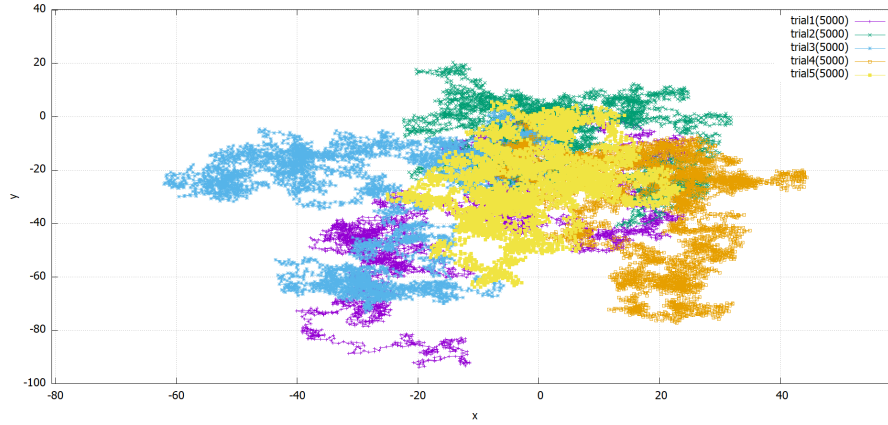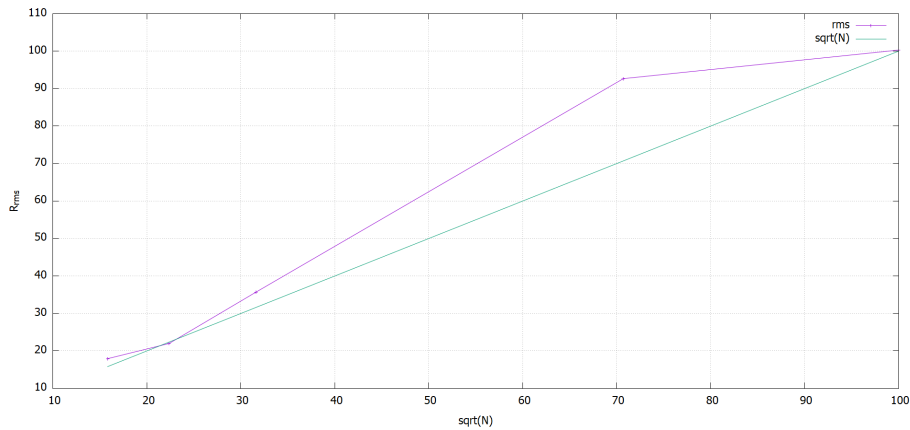

Figure 1: 5 trials of Random walk(N = 5000)

Figure 2: $R_{rms} \propto \sqrt{N}$

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