

### **Discussion note on Random walk simulation in 2D plane**

The simulation of a random walk on a 2--dim plane was done using python code. In the algorithm, random numbers between 0 *and*  $2\pi$  was taken using the random function as for the points for random walks. The model processed for random walk is a stochastic process as the model cannot be called a complete random and an element of chance is there. To verify the validity of simulated random walk, simulated results are compared with the mathematical model .Within the random walk that was simulated radial distance  $R$ ,  $R_{rms}$  and average displacement in x and y direction was found, and  $R_{rms}$  vs  $\sqrt{N}$  is plotted and the results were agreeing with the mathematical model,  $R_{rms}$  is proportional to  $\sqrt{N}$  . The average value taken removed some of the random fluctuations.