Chem. 550
Instructor: Nancy Makri

MONTE CARLO – COMPUTER ASSIGNMENT 1

In this assignment you will try the simplest, primitive Monte Carlo method, to estimate the value of π by evaluating the area of a circle. You will need a random number generator, which produces random numbers distributed between 0 and 1.

Consider a quarter of a circle with radius 1, inscribed in a square of side 1. By evaluating the ratio of areas you can infer the value of π. Generate N pairs x, y of random numbers, which will be uniformly distributed within the square. Count those with $x^2 + y^2 < 1$, which fall inside the circle. Report your estimate of π from calculations with $N = 10^2, 10^4, 10^6, 10^8$.