

Problem - 1 (Spring 2026)

Due date: 5 February, 2026

1. a) Generate N random points inside a three-dimensional cubic box of length L using a uniform random distribution.
- b) Modify the program above in such a way that the distance between any two points is greater than or equal to a minimum value of r_c .
- c) Comment on the choice of r_c values in terms of N and L . Plot the distribution of the points in both the cases above.
- d) Plot the distribution of radial distances, $P(r_{ij})$, versus r_{ij} , where r_{ij} is the distance between two points i and j . Normalize the distribution.

Note: You may use an external random number generator for generating uniform random variates.