

Untitled

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In [ ]: from math import *
dt = 0.01
l = 0.5
N = 1000
k_list = [i for i in range(7, 30)]
A = []
fun = lambda x : 1 if (x >= 0) else 0
sum123 = 0
dc = lambda a, b: log(a)/log(b)
def time_series(n1, n2, k):
    x = [2*cos(dt*i) for i in range(N)]
    y = [1*sin(dt*i) for i in range(N)]
    T1x = x[n1: n1 + k]
    T1y = y[n1: n1 + k]
    T2x = x[n2: n2 + k]
    T2y = y[n2: n2 + k]
    return T1x, T1y, T2x, T2y
def p(T1x, T1y, T2x, T2y):
    S = 0
    for i in range(len(T1x)):
        S += sqrt((T1x[i] - T2x[i])**2 + (T1y[i] - T2y[i])**2)
    return S
ck = 1000000000;
for k in k_list:
    for n1 in range(N - k):
        for n2 in range(N - k):
            T1x, T1y, T2x, T2y = time_series(n1, n2, k)
            sum123 += fun(l - p(T1x, T1y, T2x, T2y))
ans = sum123 / N**2
print("-----", ans)
if abs(ck - dc(ans, l)) <= 0.05:
    print(ans, "-----", k)
    exit()
else:
    ck = dc(ans, l)

----- 0.017237
----- 0.032449
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----- 0.045804
----- 0.05769
----- 0.068661
----- 0.078821
----- 0.087962
----- 0.096422
----- 0.104291
----- 0.111621
----- 0.118454
----- 0.125018
----- 0.131303
----- 0.137279
----- 0.142996
----- 0.148482
----- 0.153797
----- 0.158929
0.158929 ----- 24