Methods of Computational Physics - 2022, Assignment No. 05

(Date: 12 September, 2022; Due Date: 19 September, 2022)

Note: Print and file only the program listings and plots. Do not print output files of the programs, unless specifically asked in the question.

Q1 Estimate the following integral I with Monte Carlo sample mean method, with uniform sampling. Use the sample size $n = 10^6$. Estimate the error in I given by $\epsilon = \sigma/\sqrt{n}$.

$$I = \int_0^\pi \int_0^\pi \int_0^\pi \sin(x_1 x_2 x_3) dx_1 dx_2 dx_3$$

Answer: $I = 7.634249$, $\epsilon = 6.2 \times 10^{-4}$.