Abstract

This report adresses different numerical methods for solving a six-dimensional integral. The integral of interest is the energy between to electrons in a helium atom repelling eachother due to the Coloumb interaction. We assume that the wave function for each electron can be modelled like the single-particle wave function of an electron in the hydrogen atom. The integral is solved with Gaussian-Quadrature with Legendre and Laguerre polynomials, as well as two approaches to the Monte Carlo method. The standard deviation of these solutions are also calculated. In addition every procedure is timed for comparison.