

”Monte Carlo Method for Volume”

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Monte-Carlo methods have been widely used for many numerical applications and one of them is calculation of volume of random figures, especially in higher dimensions. Here, the volume of an ellipsoid with given dimensions($a = 1$, $b = 1.5$ and $c = 2$) was calculated using repeated Monte-carlo method and result was compared to the analytical volume calculated using $V = \frac{4}{3}\pi abc = 12.5286$. The fractional error with respect to analytical volume versus N (no. of points) was also plotted and $\frac{1}{\sqrt{N}}$ s was tried to fit the plot. When the randomly selected points which satisfied the criteria of being inside the ellipsoid, given by $(f = \frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} - 1 < 0)$ were plotted, ellipsoid was almost conceived.

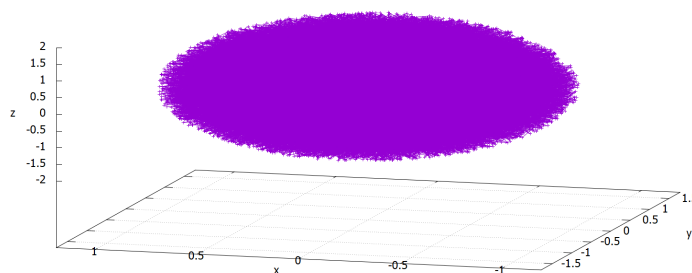


Figure 1: Ellipsoid($N = 50000$)