Computer Modelling Unit 5

bounds = [(0.1, 0.45), (0.25, 0.67), (69.5, 71.5)] for omega m, omega lambda, H0 respectively.

The number of sample points per dimension: 10

The time of the likelihood calculations: 0.684596061706543 seconds

The number of sample points per dimension: 20

The time of the likelihood calculations: 5.486903190612793 seconds

The number of sample points per dimension: 30

The time of the likelihood calculations: 18.7975811958313 seconds

The number of sample points per dimension: 40

The time of the likelihood calculations: 44.63438320159912 seconds

The number of sample points per dimension: 50

The time of the likelihood calculations: 87.32068085670471 seconds

The number of sample points per dimension: 60

The time of the likelihood calculations: 151.31815314292908 seconds

The number of sample points per dimension: 70

The time of the likelihood calculations: 240.6521909236908 seconds

The number of sample points per dimension that I am going to use is 40 because from 40 sample points the images start to look continuous especially for 2D plots, and 44 seconds are reasonable to wait for the results. A colorful cube with numbers and lines

AI-generated content may be incorrect.

A chart of a number of light

AI-generated content may be incorrect.

A diagram of a normalized distribution

AI-generated content may be incorrect.

A graph of a diagram

AI-generated content may be incorrect.

A diagram of a cluster of small colored dots

AI-generated content may be incorrect.

A graph of a number of data

AI-generated content may be incorrect.

I think both methods, likelihood grid and the metropolis algorithm, are consistent to each other and show the same result. The Metropolis analysis and the likelihood grid method yield comparable results in terms of parameter estimation, but they differ in efficiency and resolution. The difference is that the likelihood grid shows the entire range for each parameter (all over the parameter region), whereas the metropolis algorithm focuses and shows only points nearby to point of the highest probability density (in the high=probability region).