Indian Institute of Technology, Indore

Department of Astronomy, Astrophysics and Space Engineering (DAASE)

AA 608 - Astrostatistics

Assignment-3 - MH-MCMC-Eddington

Prepared by: G Akash

Roll No: msc2203121005

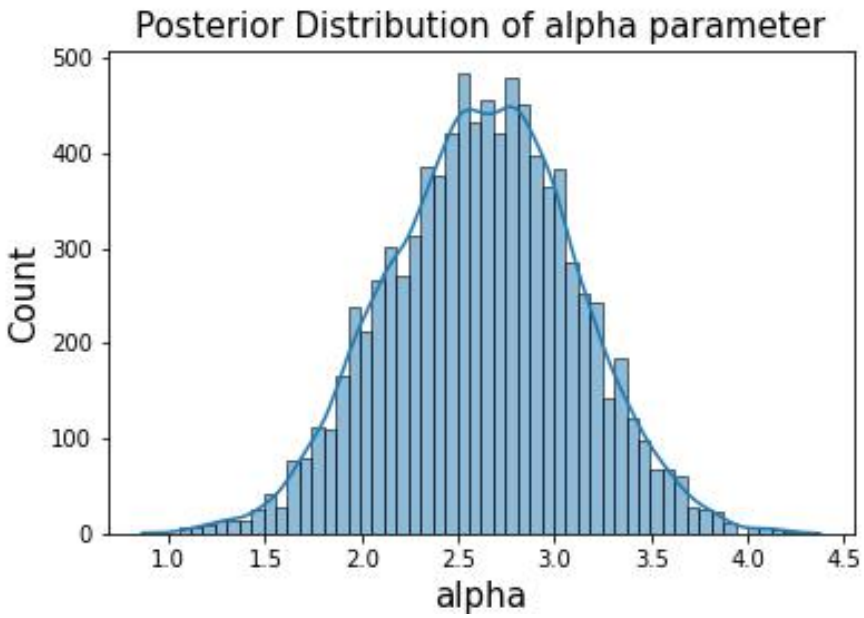
Instructor: Dr. Suman Majumdar

Results and Conclusion

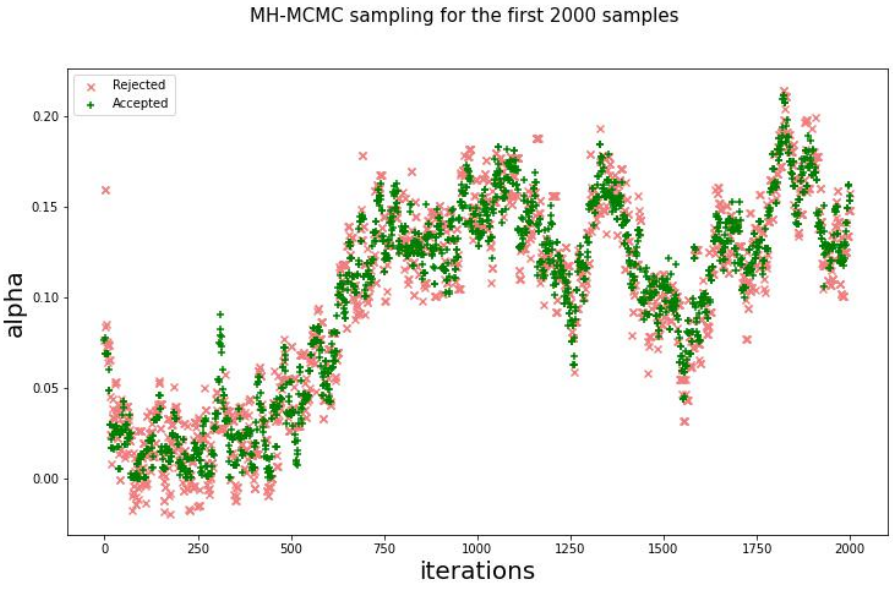
Distribution

Total Number of samples considered - 10000
10% of burn-in is considered
Random seed is taken for each run. Hence the values are subjected to change with each run but with very minimal difference.

1. **Posterior Distribution of α**



(a) The mean of the distributions of α are referenced in the plot.
(b) α parameter converges at 0.132 or 2.61 in arcsecs
(c) Mean of $\alpha = 0.132$.
(d) Standard deviation of $\alpha = 0.041$
(e) To get the value in units of arcsecs, a constant of 19.8 is multiplied.
(f) Mean of α (in arcsecs) = 2.61



(a) The above plot represents the points that are accepted and rejected.
(b) About 55.1% points are accepted (includes the burn-in phase as well).
(c) The plot shown below represents the random walk of the parameter and its convergence.