Title: Bayesian Inference and MCMC Methods in Astrophysics

1. Introduction
   (a) Quantitative analysis is the backbone of Astrophysics.
   (b) Focusing on Bayesian and MCMC in this paper bc of their popularity in the field, flexibility, and compatibility with many types of problems.
2. Methodology
   (vonToussant, Brewer)
   (a) Bayesian inference essentials
   (b) MCMC methods
   For both of these, explain how they work, maybe include the math and the code, as well as practical guidance on how to apply them to simple problems.
3. Case Studies
   (a) Bayesian Frameworks for Exoplanet detection
   (Ruffio)
      i. Problem
      ii. Methods
      iii. Pros/Cons
      iv. Extensions
   (b) Cosmological Parameter Estimation with MCMC Methods
   (Akeret)
   Notes: Make this even more specialized. Read some more about it
   (c) Bayesian approach to Gravity wave detection
   (Littenberg)
   Notes: Don't go too deep into this. Only talk about detection, don't get into fitting the graviatational waveform.
4. Conclusion
   (a) State of the field

(b) Areas for future work

(c)