The recombination history of the universe

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Abstract. I compute the electron fraction, electron density, optical depth and visibility function for times around and during recombination.

1. Introduction

In this project I will follow the algorithm presented in Callin (2005)[1] for simulating the cosmic microwave background. This is part three of four for this project.

In the first part I set up the background cosmology of the universe, and made a function that could find the conformal time as a function of x. In the second part I computed the electron fraction, electron density, optical depth and visibility function for times around and during recombination.

In this part I will use some of these functions along with the

As prevously done I will continue building on the skeleton code provided.

2. Equations

3. Implementation

4. Results

5. Conclusions

6. References

[1] P. Callin, astro-ph/0606683

7. Source code

The source code for the evolution_mod file is included for inspection. Note that the code makes use of several different files, one with various parameters, as well as the ODE solver, and the spline. This includes all files used in previous parts of the project as well.