Searching for the Missing Baryon Fraction with SPTpol and the Dark Energy Survey

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Statement of contribution:

This is to certify that:

- This thesis entitled "Studying weakly lensed galaxies with velocity maps" comprises only my original work except where indicated otherwise.
- Due acknowledgement has been made in the text to all other material used.
- The thesis is no longer than 50 pages in length, inclusive of tables, figures, bibliographies and appendices.

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Mitchell de Zylva

Acknowledgements:

You put all the people you want to thanks here :)

You need a statement of contribution, which you will sign before you submit.

Abstract

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Contents

Chapter 1

Introduction

Introduction chapter here.

1.1 Motivation

The Cosmic Microwave Background (CMB) provides the most accurate and detailed measures of the primary cosmological parameters to date For a Λ CDM universe, there are six independant paramters which descirbe the evolution and behaviour of the universe, the physical baryon density $\Omega_b h^2$, the physical dark matter density $\Omega_c h^2$, the age of the universe t_0, the scalar spectral index n_s, the curvature fluctuation amplitude Δ^2_R, and the reionisation optical depth τ.

Currently, the highest precision measures of these features from the CMB come from Planck Collaboration et al. (2018), which details that baryonic matter only comprises $\approx 5\%$ of the universe's energy density. In principle, this component of the universe should be directly measurable. At higher redshifts, in the regime where $z \geqslant 2$, the baryon fraction can be found in the absorption lines of quasars passing through the diffuse, photo-ionised intergalactic medium, known as the Lyman-α forest (Weinberg et al., 1997). However, as time moved more towards the present, this gas becomes sparser as it becomes more ionised

Chapter 2

Results

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Chapter 3

Conclusion

All your Concluding.

Bibliography

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