

# Searching for the Cosmic Dawn

Thesis by  
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## ACKNOWLEDGEMENTS

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## ABSTRACT

[This abstract must provide a succinct and informative condensation of your work. Candidates are welcome to prepare a lengthier abstract for inclusion in the dissertation, and provide a shorter one in the CaltechTHESIS record.]

## PUBLISHED CONTENT AND CONTRIBUTIONS

[Fill this out with my publications]

# TABLE OF CONTENTS

Acknowledgements . . . . .	iii
Abstract . . . . .	iv
Published Content and Contributions . . . . .	v
Table of Contents . . . . .	vi
List of Illustrations . . . . .	vii
List of Tables . . . . .	viii
Chapter I: Introduction . . . . .	1
Bibliography . . . . .	2
Chapter II: The Owens Valley Radio Observatory Long Wavelength Array . .	3
Chapter III: The Radio Sky at Meter Wavelengths: <i>m</i> -mode Analysis Imaging with the OVRO-LWA . . . . .	4
Chapter IV: 21 cm Cosmology of the Cosmic Dawn: First Spatial Power Spectrum Limits with the OVRO-LWA . . . . .	5
Chapter V: Open-Source Software . . . . .	6
5.1 TTCal . . . . .	6
5.2 BPJSpec . . . . .	6
5.3 CasaCore.jl . . . . .	6
5.4 LibHealpix.jl . . . . .	6
5.5 UnitfulAstro.jl . . . . .	6
Chapter VI: Conclusion . . . . .	7

## LIST OF ILLUSTRATIONS

<i>Number</i>	<i>Page</i>
2.1 <b>(a)</b> A picture of an OVRO-LWA antenna. <b>(b)</b> A view of the OVRO-LWA with the Sierra Mountains in the background. . . . .	3

## LIST OF TABLES

*Number**Page*



*Chapter 1*

## INTRODUCTION

The discovery of the cosmic microwave background (CMB) radiation by Penzias & Wilson (1965) provided the first direct evidence that the universe had a beginning. Arno Penzias and Robert Wilson shared the 1978 Nobel Prize in Physics for this discovery, and astronomers have been studying this radiation ever since. In fact, a second Nobel Prize was awarded to John Mather and George Smoot in 2006 for their work on the Cosmic Background Explorer (COBE) satellite, which was amongst the first experiments to demonstrate that the background radiation was anisotropic (Smoot et al., 1992). These studies of the CMB have fundamentally advanced humanity's understanding of the universe: its origin, evolution, and composition.

## BIBLIOGRAPHY

Penzias, A. A., & Wilson, R. W. 1965, ApJ, 142, 419

Smoot, G. F., Bennett, C. L., Kogut, A., et al. 1992, ApJ, 396, L1

*Chapter 2*THE OWENS VALLEY RADIO OBSERVATORY LONG  
WAVELENGTH ARRAY

Figure 2.1: **(a)** A picture of an OVRO-LWA antenna. **(b)** A view of the OVRO-LWA with the Sierra Mountains in the background.

*Chapter 3***THE RADIO SKY AT METER WAVELENGTHS: *M*-MODE  
ANALYSIS IMAGING WITH THE OVRO-LWA**

*Chapter 4***21 CM COSMOLOGY OF THE COSMIC DAWN: FIRST  
SPATIAL POWER SPECTRUM LIMITS WITH THE OVRO-LWA**

*Chapter 5*

## OPEN-SOURCE SOFTWARE

**5.1** **TTCal****5.2** **BPJSpec****5.3** **CasaCore.jl****5.4** **LibHealpix.jl****5.5** **UnitfulAstro.jl**

*Chapter 6*

## CONCLUSION