

Contents

LIST OF TABLES	xii
LIST OF FIGURES	xiii
LIST OF ABBREVIATIONS	xiv
1 INTRODUCTION	1
1.1 Quasar Absorption Line Spectroscopy	1
1.2 Galaxy Formation and Evolution	2
1.3 The Circumgalactic Medium	3
1.4 The Baryon Cycle	3
2 DATA	4
2.1 Spectral Properties	4
2.2 Reduction and Pre-Analysis	4
2.3 Redshift Path Length	4
3 AUTOMATED LINE DETECTION	5
3.1 Motivating Automated Line Detection	5
4 Automated Line Detection	5
4.1 Defining the Search Window	5
4.1.1 The Step-By-Step Recipe for Finding Redshifted Lines . .	6
5 ANALYSIS OF ABSORPTION PROPERTIES	8
5.1 Equivalent Width Regions	8
5.2 Calculating Redshifts and Velocities	8
5.3 Equivalent Widths and Kinematic Spreads	8
5.4 Column Densities	8
6 PROPERTIES AND EVOLUTION OF MGII ABSORBERS	9
6.1 Number of Absorbers Per Path Length	9

6.2	Parameterizing dN/dX to Derive Physical Properties	9
6.3	Equivalent Width Distribution	9
6.4	Column Density Distribution	9
6.5	Ω_{MgII}	9
6.6	Strong vs. Weak Absorbers	9
7	PROPERTIES AND EVOLUTION OF CIV ABSORBERS	10
7.1	Number of Absorbers Per Path Length	10
7.2	Parameterizing dN/dX to Derive Physical Properties	10
7.3	Equivalent Width Distribution	10
7.4	Column Density Distribution	10
7.5	Ω_{CIV}	10
7.6	Strong vs. Weak Absorbers	10
8	KINEMATICS PROPERTIES USING TPCF ANALYSIS	11
8.1	MgII Kinematics	11
8.1.1	MgII Redshift Evolution	11
8.2	MgII Optical Depth Behavior	11
8.3	CIV Kinematics	11
8.3.1	CIV Redshift Evolution	11
8.4	CIV Optical Depth Behavior	11
9	CONCLUSIONS	12
9.1	MgII	12
9.1.1	Strong Absorbers	12
9.1.2	Weak Absorbers	12
9.1.3	Kinematics	12
9.2	CIV	12
9.2.1	Strong Absorbers	12
9.2.2	Weak Absorbers	13
9.2.3	Kinematics	13

9.3	Evolution in the Context of Galaxy Evolution	13
9.4	Consequences, and Verification	13
9.5	Future Work	13
 Appendices		
A	THERE BE MATH IN THEM THERE HILLS	15
	REFERENCES	16