Contents

1	Intr	roduction	2
2	Inva	ariants of families of flat connections	12
	2.1	Preliminaries	12
		2.1.1 Geometric chain model of differential characters	13
		2.1.2 Fiber integration of differential characters	14
	2.2	Cohomological invariants of the space of flat connections using fiber	
		integration of differential characters	17
	2.3	Comparison with other constructions in the literature	26
3	Uni	queness of differential characters and differential K-theory	35
	3.1	Statement of Rakesh Pawar's results	37
	3.2	Existence and uniqueness results for differential cohomology theories .	42
		3.2.1 The case of differential characters	46
		3.2.2 The case of differential K-theory	50
4	Con	acluding discussion and scope for future work	55
${f Li}$	List of Symbols 5		