

Min Ho Lee

Mixed Automorphic Forms, Torus Bundles, and Jacobi Forms



Springer

Contents

Introduction	1
1 Mixed Automorphic Forms	11
1.1 Mixed Automorphic Forms of One Variable	12
1.2 Eisenstein Series and Poincaré Series	16
1.3 Cusp Forms Associated to Mixed Cusp Forms	23
1.4 Mixed Automorphic Forms and Differential Equations	29
2 Line Bundles and Elliptic Varieties	35
2.1 Mixed Cusp Forms and Line Bundles	36
2.2 Elliptic Varieties	41
2.3 Modular Symbols	44
2.4 Eichler-Shimura Relations	52
3 Mixed Automorphic Forms and Cohomology	59
3.1 Mixed Cusp Forms and Parabolic Cohomology	60
3.2 Pairings on Mixed Cusp Forms	64
3.3 Hodge Structures	71
3.4 The Kronecker Pairing	79
4 Mixed Hilbert and Siegel Modular Forms	83
4.1 Mixed Hilbert Modular Forms	84
4.2 Families of Abelian Varieties over Hilbert Modular Varieties ..	89
4.3 Mixed Siegel Modular Forms	94
4.4 Fourier Coefficients of Siegel Modular Forms	99
5 Mixed Automorphic Forms on Semisimple Lie Groups	109
5.1 Mixed Automorphic Forms on Symmetric Domains	110
5.2 Mixed Automorphic Forms on Semisimple Lie Groups	113
5.3 Eisenstein Series	119
5.4 Whittaker Vectors	125
5.5 Fourier Coefficients of Eisenstein Series	133

6	Families of Abelian Varieties	141
6.1	Kuga Fiber Varieties	142
6.2	Automorphy Factors and Kernel Functions	151
6.3	Mixed Automorphic Forms and Kuga Fiber Varieties	161
6.4	Embeddings of Kuga Fiber Varieties	164
7	Jacobi Forms	177
7.1	Jacobi Forms on Symmetric Domains	178
7.2	Fock Representations	185
7.3	Theta Functions	194
7.4	Vector-Valued Jacobi Forms	201
8	Twisted Torus Bundles	209
8.1	Two-Cocycles of Discrete Groups	210
8.2	One-Cochains Associated to 2-Cocycles	213
8.3	Families of Torus Bundles	217
8.4	Cohomology	222
	References	231
	Index	237