

Contents

1	Introduction	1
2	Preliminaries	10
2.1	Review of Algebraic groups over arbitrary fields	10
2.2	Representations of fundamental groups and Moduli spaces . . .	12
2.3	p -adic norm on a vector space and Bruhat-Tits buildings . . .	20
3	Harmonic metrics on flat vector bundles	25
3.1	Pluriharmonic maps of finite energy	25
3.2	Pluriharmonic maps of possibly infinite energy but with controlled growth at infinity	41
4	Non-abelian Hodge theory, factorization theorems for non rigid or p-adic unbounded representations	52
4.1	Higgs bundles for archimedean representations and equivariant holomorphic 1-forms for p -adic representations	52
4.2	Albanese maps and a Lefschetz type theorem for holomorphic 1-forms	63
4.3	Factorizations for nonrigid representations into almost simple complex algebraic groups	83
4.4	Factorizations for p -adic unbounded representations into almost simple p -adic algebraic groups	97
4.5	Simpson's construction of families of nonrigid representations	101
5	Shafarevich maps for representations of fundamental groups, Kodaira dimension and Chern-hyperbolicity of Shafarevich varieties	104
5.1	Shafarevich maps and general discussions	104
5.2	Constructing automorphic forms via equivariant pluriharmonic maps into Bruhat-Tits building	111

5.3	Kodaira dimension and Chern-hyperbolicity of Shafarevich varieties	113
5.4	A finiteness property of representations of fundamental groups of algebraic surfaces, which contain configurations of rational curves	119
	Reference	125
	Index	133