TABLE OF CONTENTS

Chapter 1. The heat equation approach to Hermitian-Einstein metrics on stable
bundles
§1. Definition of Hermitian-Einstein metrics
§2. Gradient flow and the evolution equation
§3. Existence of solution of evolution equation for finite time
§4. Secondary characteristics
§5. Donaldson's functional
§6. The convergence of the solution at infinite time
Appendix A. Hermitian-Einstein metrics of stable bundles over curves
Appendix B. Restriction of stable bundles
Chapter 2. Kähler-Einstein metrics for the case of negative and zero
anticanonical class
§1. Monge-Ampère equation and uniqueness
§2. Zeroth order estimates
§3. Second order estimates
§4. Hölder estimates for second derivatives
§5. Derivation of Harnack inequality by Moser's iteration technique
\$6. Historical note
Chapter 3. Uniqueness of Kähler-Einstein metrics up to biholomorphisms 116
§1. The role of holomorphic vector fields
§2. Proof of Uniqueness
§3. Computation of the Differential.
§4. Computation of the Hessian
Appendix A. Lower bounds of the Green's function of Laplacian
the state of the s
Chapter 4. Obstructions to the existence of Kähler-Einstein metrics 147
§1. Reductivity of automorphism group
§2. The obstruction of Kazdan-Warner
§3. The Futaki invariant

Chapter 5. Manifolds with suitable finite symmetry	157
§1. Motivation for the use of finite symmetry	
§2. Relation between $\sup_{\mathtt{M}} \varphi$ and $\inf_{\mathtt{M}} \varphi$	
§3. Estimation of $m+\Delta\varphi$	
§4. The use of finite group of symmetry	
§5. Applications	
References	168