

Contents

Foreword	v
CHAPTER I	
Metrics and Chern Forms.	1
§1. Néron Functions and Divisors.	1
§2. Metrics on Line Sheaves	4
§3. The Chern Form of a Metric	10
§4. Chern Forms in the Case of Riemann Surfaces	14
CHAPTER II	
Green's Functions on Riemann Surfaces	20
§1. Green's Functions	21
§2. The Canonical Green's Function	28
§3. Some Formulas About the Green's Function	30
§4. Coleman's Proof for the Existence of Green's Function	34
§5. The Green's Function on Elliptic Curves	42
CHAPTER III	
Intersections on an Arithmetic Surface	48
§1. The Chow Groups	48
§2. Intersections	55
§3. Fibrar Intersections.	58
§4. Morphisms and Base Change	62
§5. Néron Symbols	66
CHAPTER IV	
Hodge Index Theorem and the Adjunction Formula.	70
§1. Arakelov Divisors and Intersections	71
§2. The Hodge Index Theorem.	77

§3. Metrized Line Sheaves and Intersections	80
§4. The Canonical Sheaf and the Residue Theorem	87
§5. Metrizations and Arakelov's Adjunction Formula	97

CHAPTER V

The Faltings Riemann–Roch Theorem	102
§1. Riemann–Roch on an Arithmetic Curve	102
§2. Volume Exact Sequences	105
§3. Faltings Riemann–Roch	108
§4. An Application of Riemann–Roch	118
§5. Semistability	120
§6. Positivity of the Canonical Sheaf	128

CHAPTER VI

Faltings Volumes on Cohomology	131
§1. Determinants	131
§2. Determinant of Cohomology	136
§3. Existence of the Faltings Volumes	140
§4. Estimates for the Faltings Volumes	146
§5. A Lower Bound for Green's Functions	149

APPENDIX by Paul Vojta

Diophantine Inequalities and Arakelov Theory	155
§1. General Introductory Notions	156
§2. Theorems over Function Fields	160
§3. Conjectures over Number Fields	163
§4. Another Height Inequality	173
§5. Applications	176

References	179
-----------------------------	------------

Frequently Used Symbols	183
--	------------

Index	185
------------------------	------------