

Contents

	Page
§1. Analytic sheaves	1
a. sheaves of modules; b. free and locally free sheaves; c. analytic sheaves; d. coherent analytic sheaves.	
§2. Local structure of coherent analytic sheaves . . .	26
a. local structure; b. semi-local structure; c. global structure over the projective line.	
§3. Induced mappings of analytic sheaves	45
a. inverse image sheaf; b. direct image sheaf; c. some applications.	
§4. Riemann-Roch theorem	58
a. reducible vector bundles; b. Riemann-Roch theorem; c. Serre duality for vector bundles.	
§5. A classification of vector bundles of rank two . .	71
a. classification of extensions; b. divisor order; c. classification of unstable bundles; d. remarks on stable bundles; e. surfaces of low genus.	
§6. Flat vector bundles	96
a. criterion for flatness; b. Weil's theorem; c. connections and flat representatives.	
§7. Flat sheaves: geometric aspects	123
a. definitions; b. cohomology with flat sheaf coefficients; c. deRham isomorphism and duality; d. role of the universal covering space; e. duality explicitly.	
§8. Flat sheaves: analytic aspects	157
a. Prym differentials and their periods; b. some special properties; c. meromorphic Prym differentials.	

§9. Families of flat vector bundles	179
a. space of irreducible representations of the fundamental group; b. space of irreducible flat vector bundles; c. space of equivalence classes of connections; d. bundles of rank two in detail; e. analytic equivalence classes.	
Appendix 1.	231
The formalism of cohomology with coefficients in a locally free analytic sheaf.	
Appendix 2.	235
Some complications in describing classes of flat vector bundles.	