

Table of Contents

Introduction	1
Part I. The Topology of Lagrangian Manifolds	
Chapter 1. Some Topological Considerations	33
1.1 Manifolds and Bundles	33
1.2 Theorems on Transversal Regularity	67
1.3 The Index of Intersection of Submanifolds	79
1.4 Homotopy Groups	86
Chapter 2. The Geometry of Real Lagrangian Manifolds	89
2.1 Lagrangian Manifolds in Hamiltonian Space	89
2.2 The Cohomology of the Lagrangian Grassmannian	94
2.3 Characteristic Classes of Lagrangian Manifolds	104
2.4 Lagrangian Manifolds in General Position	110
Chapter 3. Complex Lagrangian Manifolds	116
3.1 The Grassmannian of Positive Lagrangian Planes	116
3.2 The Maslov Index of Complex Lagrangian Manifolds	124
3.3 Analysis on s -Analytic Manifolds	137
3.4 Positive Lagrangian s -Analytic Manifolds	169
Part II. Maslov's Canonical Operator on a Real Lagrangian Manifold	
Chapter 4. Maslov's Canonical Operator (Real Case)	183
4.1 The Construction of Maslov's Elementary Canonical Operator .	183
4.2 Commutation of Maslov's Canonical Operator and the Hamiltonian Operator	196
Chapter 5. The Asymptotics of Integrals of Rapidly Oscillating Functions with a Complex Phase	208
5.1 The Formula for Asymptotic Expansion of the Integral of a Rapidly-Oscillating Function	209

5.2 Proof of Proposition 1.2	215
Chapter 6. Maslov's Canonical Operator (Complex Case)	232
6.1 Maslov's Elementary Operator on a Complex Lagrangian Manifold	232
6.2 Commutation of the Canonical Operator and the Hamiltonian (Elementary Theory)	241
6.3 Commutation of Maslov's Canonical Operator and the Hamiltonian (General Theory)	246
6.4 Other Approaches	258
6.5 Appendix. The $1/h$ -Fourier Transform	265
Chapter 7. Some Applications	268
7.1 Asymptotic Solutions of the Cauchy Problem	268
7.2 Asymptotics of the Spectrum of $1/h$ -Pseudodifferential Operators	279
7.3 Systems of Equations	301
 Appendix. Fourier-Maslov Integral Operators (The Smooth Theory of Maslov's Canonical Operator)	
by V.E. Nazaikinskij, V.G. Oshchmian, B.Yu. Sternin, and V.E. Shatalov	307
 Bibliography	377
 Notation Index	391
 Subject Index	393