

Contents

Introduction	1
Chapter 1. Axiomatic Patterns	11
1.1. Pseudo-tensor categories	11
1.2. Complements	18
1.3. Compound tensor categories	24
1.4. Rudiments of compound geometry	32
Chapter 2. Geometry of \mathcal{D} -schemes	53
2.1. \mathcal{D} -modules: Recollections and notation	53
2.2. The compound tensor structure	67
2.3. \mathcal{D}_X -schemes	79
2.4. The spaces of horizontal sections	89
2.5. Lie* algebras and algebroids	95
2.6. Coisson algebras	113
2.7. The Tate extension	117
2.8. Tate structures and characteristic classes	129
2.9. The Harish-Chandra setting and the setting of c-stacks	143
Chapter 3. Local Theory: Chiral Basics	157
3.1. Chiral operations	157
3.2. Relation to “classical” operations	163
3.3. Chiral algebras and modules	164
3.4. Factorization	172
3.5. Operator product expansions	194
3.6. From chiral algebras to associative algebras	200
3.7. From Lie* algebras to chiral algebras	212
3.8. BRST, alias semi-infinite, homology	227
3.9. Chiral differential operators	238
3.10. Lattice chiral algebras and chiral monoids	257
Chapter 4. Global Theory: Chiral Homology	275

4.1. The cookware	275
4.2. The construction and first properties	296
4.3. The BV structure and products	313
4.4. Correlators and coinvariants	325
4.5. Rigidity and flat projective connections	230
4.6. The case of commutative \mathcal{D}_X algebras	341
4.7. Chiral homology of the de Rham-Chevalley algebras	347
4.8. Chiral homology of chiral envelopes	353
4.9. Chiral homology of lattice chiral algebras	357
Bibliography	363
Index and Notation	369