

Model Theory

Emily

February 27, 2023

INTRODUCTION

This chapter is currently empty, being just a stub for a topic I want to learn someday.

Contents

A Appendix Other Chapters 1

Appendices

A Other Chapters

Logic and Model Theory

1. Logic
2. Model Theory

Type Theory

3. Type Theory
4. Homotopy Type Theory

Set Theory

5. Sets
6. Constructions With Sets
7. Indexed and Fibred Sets

8. Relations

9. Posets

Category Theory

10. Categories
11. Constructions With Categories
12. Limits and Colimits
13. Ends and Coends
14. Kan Extensions
15. Fibred Categories
16. Weighted Category Theory

Categorical Hochschild Co/Homology

17. Abelian Categorical Hochschild Co/Homology
18. Categorical Hochschild Co/Homology

Monoidal Categories

19. Monoidal Categories
20. Monoidal Fibrations
21. Modules Over Monoidal Categories
22. Monoidal Limits and Colimits
23. Monoids in Monoidal Categories
24. Modules in Monoidal Categories
25. Skew Monoidal Categories
26. Promonoidal Categories
27. 2-Groups
28. Duoidal Categories
29. Semiring Categories

Categorical Algebra

30. Monads
31. Algebraic Theories
32. Coloured Operads
33. Enriched Coloured Operads

Enriched Category Theory

34. Enriched Categories
35. Enriched Ends and Kan Extensions
36. Fibred Enriched Categories
37. Weighted Enriched Category Theory

Internal Category Theory

38. Internal Categories
39. Internal Fibrations
40. Locally Internal Categories
41. Non-Cartesian Internal Categories
42. Enriched-Internal Categories

Homological Algebra

43. Abelian Categories

44. Triangulated Categories
45. Derived Categories

Categorical Logic

46. Categorical Logic
47. Elementary Topos Theory
48. Non-Cartesian Topos Theory

Sites, Sheaves, and Stacks

49. Sites
50. Modules on Sites
51. Topos Theory
52. Cohomology in a Topos
53. Stacks

Complements on Sheaves

54. Sheaves of Monoids

Bicategories

55. Bicategories
56. Biadjunctions and Pseudomonads
57. Bilimits and Bicolimits
58. Biends and Bicoends
59. Fibred Bicategories
60. Monoidal Bicategories
61. Pseudomonoids in Monoidal Bicategories

Higher Category Theory

62. Tricategories
63. Gray Monoids and Gray Categories
64. Double Categories
65. Formal Category Theory
66. Enriched Bicategories
67. Elementary 2-Topos Theory

Simplicial Stuff

68. The Simplex Category
69. Simplicial Objects
70. Cosimplicial Objects
71. Bisimplicial Objects

-
- 72. [Simplicial Homotopy Theory](#)
 - 73. [Cosimplicial Homotopy Theory](#)
 - Cyclic Stuff**
 - 74. [The Cycle Category](#)
 - 75. [Cyclic Objects](#)
 - Cubical Stuff**
 - 76. [The Cube Category](#)
 - 77. [Cubical Objects](#)
 - 78. [Cubical Homotopy Theory](#)
 - Globular Stuff**
 - 79. [The Globe Category](#)
 - 80. [Globular Objects](#)
 - Cellular Stuff**
 - 81. [The Cell Category](#)
 - 82. [Cellular Objects](#)
 - Homotopical Algebra**
 - 83. [Model Categories](#)
 - 84. [Examples of Model Categories](#)
 - 85. [Homotopy Limits and Colimits](#)
 - 86. [Homotopy Ends and Coends](#)
 - 87. [Derivators](#)
 - Topological and Simplicial Categories**
 - 88. [Topologically Enriched Categories](#)
 - 89. [Simplicial Categories](#)
 - 90. [Topological Categories](#)
 - Quasicategories**
 - 91. [Quasicategories](#)
 - 92. [Constructions With Quasicategories](#)
 - 93. [Fibrations of Quasicategories](#)
 - 94. [Limits and Colimits in Quasicategories](#)
 - 95. [Ends and Coends in Quasicategories](#)
 - 96. [Weighted \$\infty\$ -Category Theory](#)
 - 97. [\$\infty\$ -Topos Theory](#)
 - Cubical Quasicategories**
 - 98. [Cubical Quasicategories](#)
 - Complete Segal Spaces**
 - 99. [Complete Segal Spaces](#)
 - ∞ -Cosmoi**
 - 100. [\$\infty\$ -Cosmoi](#)
 - Enriched and Internal ∞ -Category Theory**
 - 101. [Internal \$\infty\$ -Categories](#)
 - 102. [Enriched \$\infty\$ -Categories](#)
 - $(\infty, 2)$ -Categories**
 - 103. [\$\(\infty, 2\)\$ -Categories](#)
 - 104. [2-Quasicategories](#)
 - (∞, n) -Categories**
 - 105. [Complcial Sets](#)
 - 106. [Comical Sets](#)
 - Double ∞ -Categories**
 - 107. [Double \$\infty\$ -Categories](#)
 - Higher Algebra**
 - 108. [Differential Graded Categories](#)
 - 109. [Stable \$\infty\$ -Categories](#)
 - 110. [\$\infty\$ -Operads](#)
 - 111. [Monoidal \$\infty\$ -Categories](#)
 - 112. [Monoids in Symmetric Monoidal \$\infty\$ -Categories](#)
 - 113. [Modules in Symmetric Monoidal \$\infty\$ -Categories](#)
 - 114. [Dendroidal Sets](#)
 - Derived Algebraic Geometry**
 - 115. [Derived Algebraic Geometry](#)

116. Spectral Algebraic Geometry

Condensed Mathematics

117. Condensed Mathematics

Monoids

- 118. Monoids
- 119. Constructions With Monoids
- 120. Tensor Products of Monoids
- 121. Indexed and Fibred Monoids
- 122. Indexed and Fibred Commutative Monoids
- 123. Monoids With Zero

Groups

- 124. Groups
- 125. Constructions With Groups

Algebra

- 126. Rings
- 127. Fields
- 128. Linear Algebra
- 129. Modules
- 130. Algebras

Near-Semirings and Near-Rings

- 131. Near-Semirings
- 132. Near-Rings

Semirings

- 133. Semirings
- 134. Commutative Semirings
- 135. Semifields
- 136. Semimodules

Hyper-Algebra

- 137. Hypermonoids
- 138. Hypersemirings and Hyperringings
- 139. Quantaes

Commutative Algebra

140. Commutative Rings

More Algebra

- 141. Plethories
- 142. Graded Algebras
- 143. Differential Graded Algebras
- 144. Representation Theory
- 145. Coalgebra
- 146. Topological Algebra

Real Analysis, Measure Theory, and Probability

- 147. Real Analysis
- 148. Measure Theory
- 149. Probability Theory
- 150. Stochastic Analysis

Complex Analysis

- 151. Complex Analysis
- 152. Several Complex Variables

Functional Analysis

- 153. Topological Vector Spaces
- 154. Hilbert Spaces
- 155. Banach Spaces
- 156. Banach Algebras
- 157. Distributions

Harmonic Analysis

- 158. Harmonic Analysis on \mathbb{R}

Differential Equations

- 159. Ordinary Differential Equations
- 160. Partial Differential Equations

p -Adic Analysis

- 161. p -Adic Numbers
- 162. p -Adic Analysis
- 163. p -Adic Complex Analysis
- 164. p -Adic Harmonic Analysis
- 165. p -Adic Functional Analysis

166. p -Adic Ordinary Differential Equations
 167. p -Adic Partial Differential Equations

Number Theory

168. Elementary Number Theory
 169. Analytic Number Theory
 170. Algebraic Number Theory
 171. Class Field Theory
 172. Elliptic Curves
 173. Modular Forms
 174. Automorphic Forms
 175. Arakelov Geometry
 176. Geometrisation of the Local Langlands Correspondence
 177. Arithmetic Differential Geometry

Topology

178. Topological Spaces
 179. Constructions With Topological Spaces
 180. Conditions on Topological Spaces
 181. Sheaves on Topological Spaces
 182. Topological Stacks
 183. Locales
 184. Metric Spaces

Differential Geometry

184. Topological and Smooth Manifolds
 185. Fibre Bundles, Vector Bundles, and Principal Bundles
 186. Differential Forms, de Rham Cohomology, and Integration
 187. Riemannian Geometry
 188. Complex Geometry
 189. Spin Geometry
 190. Symplectic Geometry
 191. Contact Geometry
 192. Poisson Geometry

193. Orbifolds
 194. Smooth Stacks
 195. Diffeological Spaces

Lie Groups and Lie Algebras

196. Lie Groups
 197. Lie Algebras
 198. Kac–Moody Groups
 199. Kac–Moody Algebras

Homotopy Theory

200. Algebraic Topology
 201. Spectral Sequences
 202. Topological K -Theory
 203. Operator K -Theory
 204. Localisation and Completion of Spaces
 205. Rational Homotopy Theory
 206. p -Adic Homotopy Theory
 207. Stable Homotopy Theory
 208. Chromatic Homotopy Theory
 209. Topological Modular Forms
 210. Goodwillie Calculus
 211. Equivariant Homotopy Theory

Schemes

212. Schemes
 213. Morphisms of Schemes
 214. Projective Geometry
 215. Formal Schemes

Morphisms of Schemes

216. Finiteness Conditions on Morphisms of Schemes
 217. Étale Morphisms

Topics in Scheme Theory

218. Varieties
 219. Algebraic Vector Bundles
 220. Divisors

Fundamental Groups of Schemes

- 221. The Étale Topology
- 222. The Étale Fundamental Group
- 223. Tannakian Fundamental Groups
- 224. Nori's Fundamental Group Scheme
- 225. Étale Homotopy of Schemes

Cohomology of Schemes

- 226. Local Cohomology
- 227. Dualising Complexes
- 228. Grothendieck Duality

Group Schemes

- 229. Flat Topologies on Schemes
- 230. Group Schemes
- 231. Reductive Group Schemes
- 232. Abelian Varieties
- 233. Cartier Duality
- 234. Formal Groups

Deformation Theory

- 235. Deformation Theory
- 236. The Cotangent Complex

Étale Cohomology

- 237. Étale Cohomology
- 238. ℓ -Adic Cohomology
- 239. Pro-Étale Cohomology

Crystalline Cohomology

- 240. Hochschild Cohomology
- 241. De Rham Cohomology
- 242. Derived de Rham Cohomology
- 243. Infinitesimal Cohomology
- 244. Crystalline Cohomology
- 245. Syntomic Cohomology
- 246. The de Rham–Witt Complex
- 247. p -Divisible Groups
- 248. Monsky–Washnitzer Cohomology
- 249. Rigid Cohomology

- 250. Prismatic Cohomology

Algebraic K -Theory

- 251. Topological Cyclic Homology
- 252. Topological Hochschild Homology
- 253. Topological André–Quillen Homology
- 254. Algebraic K -Theory
- 255. Algebraic K -Theory of Schemes

Intersection Theory

- 256. Chow Homology
- 257. Intersection Theory

Monodromy Groups in Algebraic Geometry

- 258. Monodromy Groups

Algebraic Spaces

- 259. Algebraic Spaces
- 260. Morphisms of Algebraic Spaces
- 261. Formal Algebraic Spaces

Deligne–Mumford Stacks

- 262. Deligne–Mumford Stacks

Algebraic Stacks

- 263. Algebraic Stacks
- 264. Morphisms of Algebraic Stacks

Moduli Theory

- 265. Moduli Stacks

Motives

- 266. Tannakian Categories
- 267. Vanishing Cycles
- 268. Motives
- 269. Motivic Cohomology
- 270. Motivic Homotopy Theory

Logarithmic Algebraic Geometry

- 271. Log Schemes

Analytic Geometry

- 272. Real Algebraic Geometry
- 273. Complex-Analytic Spaces
- 274. Rigid Spaces
- 275. Berkovich Spaces
- 276. Adic Spaces
- 277. Perfectoid Spaces

 p -Adic Hodge Theory

- 278. Fontaine's Period Rings
- 279. The p -Adic Simpson Correspondence

Algebraic Geometry Miscellanea

- 280. Tropical Geometry
- 281. \mathbb{F}_1 -Geometry

Physics

- 282. Classical Mechanics
- 283. Electromagnetism
- 284. Special Relativity
- 285. Statistical Mechanics
- 286. General Relativity
- 287. Quantum Mechanics
- 288. Quantum Field Theory
- 289. Supersymmetry
- 290. String Theory
- 291. The AdS/CFT Correspondence

Miscellany

- 292. To Be Refactored
- 293. Miscellanea
- 294. Questions