Homotopy Type Theory

Emily

February 27, 2023

INTRODUCTION

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

Contents

| Α | Appendix Other Chapters |
|---|-------------------------|
| | |
| _ | •• |

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
- 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
- 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
- Limits and Colimits in Quasicategories

- 95. Ends and Coends in Quasicategories
- 96. Weighted ∞-Category Theory
- 97. ∞-Topos Theory

Cubical Quasicategories

98. Cubical Quasicategories

Complete Segal Spaces

99. Complete Segal Spaces

∞-Cosmoi

100. ∞-Cosmoi

Enriched and Internal ∞-Category Theory

- 101. Internal ∞-Categories
- 102. Enriched ∞-Categories
- $(\infty, 2)$ -Categories
- 103. $(\infty, 2)$ -Categories
- 104. 2-Quasicategories
- (∞, n) -Categories
- 105. Complicial Sets
- 106. Comical Sets

Double ∞-Categories

107. Double ∞-Categories

Higher Algebra

- 108. Differential Graded Categories
- 109. Stable ∞-Categories
- 110. ∞-Operads
- 111. Monoidal ∞-Categories
- 112. Monoids in Symmetric Monoidal ∞-Categories
- 113. Modules in Symmetric Monoidal ∞-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 Hyperrings
- 139. Quantales

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
- 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