Contents

Foreword ................................................................. vii

Introduction to Teichmüller theory, old and new, IV
by Athanase Papadopoulos ........................................... 1

Part A. The metric and the analytic theory, 4
Chapter 1. Local and global aspects of Weil–Petersson geometry
by Sumio Yamada .......................................................... 43

Chapter 2. Simple closed geodesics and the study of Teichmüller spaces
by Hugo Parlier .......................................................... 113

Chapter 3. Curve complexes versus Tits buildings: structures and applications
by Lizhen Ji .............................................................. 135

Chapter 4. Extremal length geometry
by Hideki Miyachi .................................................. 197

Chapter 5. Compactifications of Teichmüller spaces
by Ken’ichi Ohshika ................................................... 235

Chapter 6. Arc geometry and algebra: foliations, moduli spaces, string topology and field theory
by Ralph M. Kaufmann .................................................... 255

Chapter 7. The horoboundary and isometry group of Thurston’s Lipschitz metric
by Cormac Walsh .......................................................... 327

Chapter 8. The horofunction compactification of the Teichmüller metric
by Lixin Liu and Weixu Su ................................................. 355
Chapter 9. Lipschitz algebras and compactifications of Teichmüller space
  by Hideki Miyachi ........................................................... 375

Chapter 10. On the geodesic geometry of infinite-dimensional Teichmüller spaces
  by Zhong Li ................................................................. 415

Chapter 11. Holomorphic families of Riemann surfaces and monodromy
  by Hiroshige Shiga ........................................................ 439

Part B. Representation spaces and generalized structures, 2

Chapter 12. The deformation of flat affine structures on the two-torus
  by Oliver Baues ............................................................ 461

Chapter 13. Higher Teichmüller spaces: from $\text{SL}(2, \mathbb{R})$ to other Lie groups
  by Marc Burger, Alessandra Iozzi, and Anna Wienhard .................. 539

Chapter 14. The theory of quasiconformal mappings in higher dimensions, I
  by Gaven J. Martin .......................................................... 619

Part C. Dynamics

Chapter 15. Infinite-dimensional Teichmüller spaces and modular groups
  by Katsuhiko Matsuzaki .................................................. 681

Chapter 16. Teichmüller spaces and holomorphic dynamics
  by Xavier Buff, Guizhen Cui, and Lei Tan ................................ 717

Part D. The quantum theory, 2

Chapter 17. A survey of quantum Teichmüller space and Kashaev algebra
  by Ren Guo ................................................................. 759

Part E. Sources

Chapter 18. Variable Riemann surfaces (translated from the German by Annette A'Campo-Neuen)
  by Oswald Teichmüller .................................................... 787
Chapter 19. A commentary on Teichmüller’s paper “Veränderliche Riemannsche Flächen”

by Annette A’Campo-Neuen, Norbert A’Campo, Lizhen Ji, and Athanase Papadopoulos

List of Contributors

Index