COMPLEX ANALYSIS

Course Content

July 17-August 11, 2023 — SMI Summer School Perugia

Professor John Erik Fornaess, NTNU, Trondheim

Textbook: Walter Rudin, "Real and Complex Analysis", Third edition 1987. Remark: You can use any edition of the book.

Program: Material from Chapters 10-14. Remark: The course is completely self-contained and presumes no previous knowledge of complex analysis.

Further indication for suggested reading before the course: Reviewing basic knowledge about one and two real variable calculus. We will use tools from calculus such as integration on curves, sequences and infinite sums and radius of convergence of power series.

More details about the course:

- 1. Elementary Properties of Analytic Functions
- 2. Complex differentiation.
- 3. Integration over paths.
- 4. The local Cauchy Theorem
- 5. Power series representation
- 6. The Open mapping theorem
- 7. The global Cauchy Theorem
- 8. The Maximum Modulus Principle
- 9. The Schwartz lamma
- 10. Conformal Mappings
- 11. Simply connected regions
- 12. Fractional Transformations
- 13. Normal Families
- 14. The Riemann mapping theorem
- 15. Koebe 1/4 Theorem (if time permits)