Maskit, Bernard
Kleinian groups. (English) Zbl 0627.30039
Grundlehren der Mathematischen Wissenschaften, 287. Berlin etc.: Springer-Verlag. XIII, 326 p.; DM 128.00 (1988).

Kleinian groups are important in the modern studies of Riemann surfaces, complex analysis, and the topology of 3-manifolds. The author has played a major role in the analysis and classification of Kleinian groups. Highlights of the book that are most appropriately written by the author are (1) Maskit's very clean proof of the Poincaré polyhedron theorem, (2) proofs of the Klein-Maskit combination theorems, (3) forty pages of interesting examples of Kleinian groups constructed in large measure by means of the combination theorems, and (4) a decomposition theorem for function groups.

The first four chapters develop the foundation-fractional linear transformations, discontinuous groups in the plane (including Jørgensen's inequality and Ford domains) covering spaces, and groups of isometries (Euclidean, spherical, and hyperbolic).

Then the analysis of the groups begin-elementary groups, geometric basic groups, Fuchsian and quasi-fuchsian groups, geometrically finite groups, special examples, B-groups, and function groups.

Books and papers on Kleinian groups tend to be either very analytic and function theoretic in nature, or geometric and group theoretic in nature. The Maskit book is of the latter type. Maskit carefully skirts for example, the Ahlfors finiteness theorem and the analytic portion of deformation theory.

The book is an excellent reference to widely known, seldom proved folklore. The book is a lovely reference and full of delights.

Reviewer: J.W.Cannon

MSC:

30F40	Kleinian groups (aspects of compact Riemann surfaces and uniformization)	
30-02	Research exposition (monographs, survey articles) pertaining to functions of a complex variable	

Cited in **7** Reviews
Cited in **175** Documents

Keywords:

Fuchsian groups; fractional linear transformations; Klein-Maskit combination theorems