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Continued Fractions, Discrete Groups and Complex Dynamics

CMFT 1 No.2 (2001), 535–594. [ISSN 1617-9447]

Abstract. It is well-known that a continued fraction may be regarded as a sequence of Möbius maps. In this partly expository paper we consider continued fractions by examining the action of Möbius maps in hyperbolic space, and in all dimensions. We obtain a general version of the Stern-Stolz theorem valid in all dimensions, and we draw comparisons between the theory of continued fractions and the theories of discrete groups of Möbius maps, and complex dynamics.

Keywords. Continued fractions, Möbius maps, complex dynamics, discrete groups, hyperbolic geometry, inversive geometry.

2000 MSC. Primary 40A15; Secondary 30B70, 11J70.

Received. April 29, 2002.