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Martin J Bridgeman*, Department of Mathematics, Boston College, Chestnut Hill, MA 02467,
and **Edward Taylor**. *Length distortion and the Hausdorff dimension of limit sets.*

Let Γ be a quasi-Fuchsian Kleinian group. We define the distortion function along geodesic rays lying on the boundary of the convex hull of the limit set, where each ray is pointing in a randomly chosen direction. The distortion function measures the ratio of the intrinsic to extrinsic metrics, and is defined asymptotically as the length of the ray goes to infinity. Our main result is that the distortion function is both almost everywhere constant and bounded above by the Hausdorff dimension of the limit set of Γ . **As a consequence, we are able to provide a geometric proof of the following result of Bowen:** If the limit set of Γ is not a round circle, then the Hausdorff dimension of the limit set is strictly greater than one. The proofs are developed from results in Patterson-Sullivan theory and ergodic theory. (Received August 31, 2000)