Constant Gaussian curvature foliations
and Schläfli formulae of hyperbolic 3-manifolds

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Abstract. We study the geometry of the foliation by constant Gaussian curvature surfaces $(\Sigma_k)_k$ of a hyperbolic end, and how it relates to the structures of its boundary at infinity and of its pleated boundary. First, we show that the Thurston and the Schwarzian parametrizations are the limits of two families of parametrizations of the space of hyperbolic ends, defined by Labourie in [18] in terms of the geometry of the leaves Σ_k. We give a new description of the renormalized volume using the constant curvature foliation. We prove a generalization of McMullen's Kleinian reciprocity theorem, which replaces the role of the Schwarzian parametrization with Labourie's parametrizations. Finally, we describe the constant curvature foliation of a hyperbolic end as the integral curve of a time-dependent Hamiltonian vector field on the cotangent space to Teichmüller space, in analogy to the Moncrief flow for constant mean curvature foliations in Lorentzian space-times.