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Finally, for a demonstration of how to weave a spell with geometry and analysis on hyperbolic space, I recommend the beautiful article by F. Apéry in Gazette des Mathematiciens (1982), pp. 57–86, entitled *La baderne d'Apollonius*, which also provides some illustrations of the wide opportunities for computer graphics in this field, beyond the current obsession with fractal curves.

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Teichmüller theory and quadratic differentials, by Frederick P. Gardiner. John Wiley and Sons, New York, Chichester, Brisbane, Toronto, Singapore, 1987, xvii+236 pp., $46.95. ISBN 0-471-84539-6

The theory of moduli of Riemann surfaces occupies a central role in modern mathematics. Its origins lie in the classical theory developed in the nineteenth century, and it has attracted the attention of many of the outstanding mathematicians of the twentieth century, including Poincaré and Hilbert at the beginning of the century, Ahlfors and Bers during most of the middle half of this century, and Thurston and Sullivan at the present time. The subject is rich with deep general theories and full of interesting special cases. It has a technology of its own, but borrows extensively from other disciplines (topology, algebraic geometry, several complex variables) and has applications to diverse fields (partial differential equations, minimal surfaces, particle physics).

One of the main objects in the theory is the Teichmüller space $T(p,n)$ whose points are all the "marked" compact Riemann surfaces of genus p with n punctures or distinguished points. To avoid the elementary and easy to handle cases, one assumes that the surface has negative Euler characteristic; that is, both p and n are nonnegative integers with $2p-2+n>0$. By a marking on a surface, we mean a choice of a basis for the fundamental group of the surface. It is an important observation that the space of marked surfaces is easier to study than the more natural object $R(p,n)$ consisting of conformal