

UNIFORMIZATION OF RIEMANN SURFACES IN GENUS 2

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From the uniformization theorem of Koebe-Poincaré we know that every compact Riemann surface of genus $g \geq 2$ can be endowed with a hyperbolic structure. On the other hand a compact Riemann surface is also a complex algebraic curve, that is the set of zeros of a polynomial equation with complex coefficients. Hence a compact Riemann surface of genus $g \geq 2$ can be described as a hyperbolic surface and by a polynomial equation. The uniformization problem is then to link explicitly these two descriptions.

In this talk we shall present some aspects of a method leading to the uniformizing function of a genus 2 compact Riemann surface to the corresponding algebraic curve. This method is due to Peter Buser and Robert Silhol, and the basic underlying idea is to reduce the problem to the known case of genus 1. This method then yields an algorithm computing an approximation of the uniformizing function.