TRANSCENDENTAL NUMBERS AND UNIFORMIZATION

We intend to explain two conjectures (yet open) due to S. Lang, which relate the theory of transcendental numbers and the uniformization of Riemann surfaces. Of the two conjectures, the one concerning the values of the covering map will be seen to be a straightforward generalization of the classical results on the values of the exponential function and the Weierstrass $\wp$-function. We will focus on the conjecture which asserts the transcendence of the covering radius in the case of hyperbolic Riemann surfaces.

The conjectures will be illustrated using the most elementary case of $\mathbb{P}^1 - \{0, 1, \infty\}$. If time permits, we will explain the relation of the conjecture about the covering radius to the periods of abelian varieties.