Non-Archimedean Uniformization and its application

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Complex uniformization states that any projective smooth algebraic curve X with genus $g \geq 2$ can be uniformized by the half upper plane $\mathfrak{h}^{\pm} = \mathbb{P}^1(\mathbb{C}) - \mathbb{P}^1(\mathbb{R})$, more precisely, we have $X \cong \Gamma \setminus \mathfrak{h}^{\pm}$, where Γ is a discrete cocompact subgroup of $\mathrm{PGL}(2, \mathbb{R})$. The non-archimedean analogue construction starts with Tate curves, it has been generalized to higher genus cases by Mumford and to the higher dimension cases by Mustafin which showed wide applications in Algebraic Geometry and Number Theory. In this talk, I will first introduce the basic facts and ideas of non-archimedean uniformization and discuss some applications in mirror symmetry if time is permitted.