MOHAMMAD SHIRAZI, University of Manitoba

Grunsky Operator and Inequality for Open Riemann Surfaces with Finite Borders

Consider an open Riemann surface Σ of genus $g > 0$ with $n > 1$ borders, each one homeomorphic to the unit circle. The surface Σ can be described as a compact Riemann surface $\mathcal{R}$ of the same genus g, from which n simply-connected domains $\Omega_1, \ldots, \Omega_n$, removed; that is, $\Sigma = \mathcal{R} \backslash \cup cl(\Omega_k)$. Fix conformal maps f_k from the unit disc $\mathbb{D}$ onto $\Omega_k, k = 1, \ldots, n$. We may assume each f_k has a quasiconformal extension to an open neighbourhood of $\mathbb{D}$. Let $\mathbf{f} = (f_1, \ldots, f_n)$.

I will define the *Grunsky operator* $Gr_{\mathbf{f}}$ corresponding to $\mathbf{f}$ (equivalently to Σ) on some Dirichlet spaces when all the boundary curves are quasicircles in $\mathcal{R}$. I will show that the norm of the Grunsky operator is less than or equal to one. This is a generalization of the classical *Grunsky inequalities* from the planar case to bordered Riemann surfaces described above.

Joint work with E. Schippers and W. Staubach.