ABSTRACT:

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Spherical metrics on conical surfaces

A celebrated result by Poincaré states that a compact Riemann surface of positive genus has a conformal metric of constant curvature, unique up to rescaling. Clearly, the case of genus 0 is not so exciting: there is a unique complex structure and a unique metric of curvature 1 up to Möbius transformations.

The problem becomes more interesting if we require such metrics to have conical singularities of prescribed angles at a finite subset of marked points. The case of negative and zero curvature was settled by McOwen and Troyanov: they established the existence and uniqueness of such a metric in each conformal class.

The case of positive curvature is more delicate: existence and uniqueness results are known for small angles (Troyanov), whereas existence and non-uniqueness results are known in positive genus (Bartolucci-De Marchis-Malchiodi). In a joint work with D.Panov (still in progress), we study the moduli space of such spherical metrics: we begin determining for which angle assignment such moduli space is not empty in genus 0.