

Stanford Department of Mathematics Colloquium

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The Good Pants Homology and the Ehrenpreis Conjecture

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Abstract

The long-standing Ehrenpreis conjecture states that any two Riemann surfaces have finite covers that are nearby (in the Teichmüller metric). In joint work with Vladimir Markovic, we prove the Ehrenpreis conjecture.

We show that every hyperbolic surface S is covered by a "good model", and every good model is close to a "perfect model", where the perfect models are chosen so that any two perfect models have a common finite cover. To show that S is covered by a good model, we find a large collection of "good pairs of pants" immersed in S , and assemble them on their boundaries (the "good curves") to form a cover of S . A serious difficulty may arise because there are more good pants on one side of S than the other: we rectify this imbalance through an analysis of the "good pants homology" of good curves modulo the boundaries of good pants.