

Mapping class groups and twisted rabbits

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The twisted rabbit problem is a celebrated problem in complex dynamics. Work of Thurston proves that up to equivalence, there are exactly three branched coverings of the sphere to itself satisfying certain conditions. When one of these branched coverings is modified by a mapping class, a map equivalent to one of the three coverings results. Which one?

After remaining open for 25 years, this problem was solved by Bartholdi-Nekrashevych using iterated monodromy groups. In joint work with Belk, Lanier, and Margalit, we adapt techniques used to study mapping class groups to give an alternate, topological solution. Our approach allows us to solve generalizations of the twisted rabbit problem.