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*Cyclic Branched Covers of the Sphere and the Lifiable Mapping Class Group*

Given a (possibly branched) covering space between surfaces, we can ask the following question: Which elements of the mapping class group of the base space have representatives that lift to homeomorphisms of the total space? Birman and Hilden first considered this question in the case of the 2-sheeted cover of the sphere where the deck group is generated by a fixed hyperelliptic involution. In this case, they answered the question above with a resounding "everything lifts"! In this talk we will answer the same question for other families of cyclic branched covers over the sphere, and correct an error of Birman and Hilden.

This is joint work with Rebecca Winarski.