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Irreducible components of Hurwitz spaces parameterizing Galois coverings of curves of positive genus. (English) [Zbl 1338.14031](#)

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Given a complex smooth projective curve Y of genus ≥ 1 , a finite group G and a positive integer $n \geq 1$, let $H_n^G(Y)$ be the Hurwitz space classifying the G -equivalence classes of G -covers over Y branched over n points on Y . Then, $H_n^G(Y)$ is a finite étale cover over the symmetric configuration space $Y^{(n)} \setminus \Delta$ parametrizing the sets of points on Y with cardinality n .

The author describes monodromy actions of the explicit generators of $\pi_1(Y^{(n)} \setminus \Delta)$ due to *J. S. Birman* [Commun. Pure Appl. Math. 22, 41–72 (1969; [Zbl 0157.30904](#))] and *G. P. Scott* [Proc. Camb. Philos. Soc. 68, 605–617 (1970; [Zbl 0203.56302](#))] on the Hurwitz systems $(t_1, \dots, t_n, \lambda_1, \mu_1, \dots, \lambda_g, \mu_g) \in G^{2g+n}$ which are by definition those tuples whose entries generate G and satisfy $t_i \neq 1$ ($i = 1, \dots, n$) and $t_1 \cdots t_n = [\lambda_1, \mu_1] \cdots [\lambda_g, \mu_g]$.

In the last section, presented is a useful tool for determining if two Hurwitz systems are braid-equivalent: Let $(t_i, \lambda_j, \mu_j)_{1 \leq i \leq n, 1 \leq j \leq g}$ be a Hurwitz system for a (not necessarily finite) group G . Suppose $t_s t_{s+1} = 1$ for a particular s ($1 \leq s \leq n-1$). Then, for any element $h \in G$ written as a product of the $t_k^{\pm 1}, \lambda_l^{\pm 1}, \mu_l^{\pm 1}$ ($1 \leq k \leq n, 1 \leq l \leq g; k \notin \{s, s+1\}$), the system $(t_i, \lambda_j, \mu_j)_{1 \leq i \leq n, 1 \leq j \leq g}$ is braid-equivalent to the system obtained by replacing t_s, t_{s+1} by their h -conjugates respectively.

Reviewer: [Hiroaki Nakamura \(Osaka\)](#)

MSC:

- [14H10](#) Families, moduli of curves (algebraic)
- [14H30](#) Coverings of curves, fundamental group
- [20F36](#) Braid groups; Artin groups

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Keywords:

Hurwitz space; configuration space; braid orbits; Nielsen classes

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