

## The Riemann-Hurwitz Equation

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The Riemann-Hurwitz equation for a finite group acting on a closed surface  $S$  with isolated fixed points is just a simple application of inclusion-exclusion, but it plays the leading role in all study of surface symmetry and, through a remarkable series of coincidences, in my own research. Those instances include, in chronological order, the classification of group actions on the sphere and torus, the groups of (White) genus one, the Hurwitz bound for the genus of a group, the group of genus two, the symmetric genus of a group, the classification of regular maps of genus  $p+1$  for  $p$  prime, Kulkarni's theorem, and the symmetry of closed surfaces immersed in euclidean 3-space.