

Group actions on Jacobian varieties

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Consider a finite group G acting on a Riemann surface S , and the associated branched Galois cover $\pi : S \rightarrow Y = S/G$. We introduce the concept of geometric signature for the action of G , and we show that it captures much information: the geometric structure of the lattice of intermediate covers, the isotypical decomposition of the rational representation of the group G acting on the Jacobian variety J_S of S , and the dimension of the subvarieties of the isogeny decomposition of J_S . We also give a version of Riemann's existence theorem, adjusted to the present setting.