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Mirrors on Platonic Riemann Surfaces

Abstract Let X be a Riemann surface of genus $g > 1$ and let $\mathcal{M}$ be a regular map on X. A reflection σ of $\mathcal{M}$ fixes some simple closed geodesics on X, which are called the mirrors of σ. Let M be a mirror on X. Then there exist two particular conformal automorphisms of $\mathcal{M}$ that fix M setwise and rotate it in opposite directions. These automorphisms are called the rotary automorphisms of $\mathcal{M}$. In this talk we present a formula for the number of mirrors on X fixed by the reflections of $\mathcal{M}$ in terms of the orders of the rotary automorphisms and the group of automorphisms of M. We also give some applications of this formula to some well known Riemann surfaces.