

Enumeration of orientably-regular maps on twisted linear fractional groups

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The twisted linear fractional groups $M(q^2)$ for q an odd prime power are well known as the ‘other’ family of Zassenhaus’ sharply 3-transitive groups (of degree $q + 1$), the better known such family being the groups $\text{PGL}(2, q)$. We will look at these two families from the perspective of representing orientably-regular maps, that is, graph embeddings with the ‘highest level’ of orientation-preserving symmetry. This turns out to be equivalent to representing the groups as smooth quotients of triangle groups. While the situation for $\text{PGL}(2, q)$ (and also $\text{PSL}(2, q)$) has been well understood, the family of groups $M(q^2)$ have been somewhat neglected. In this talk we will present results on enumeration of orientably-regular maps with automorphism group isomorphic to $M(q^2)$, or, equivalently, on triangle groups admitting $M(q^2)$ as a smooth quotient.