

**The Hurwitz space of  $PSL(5, q)$**

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Let  $q$  be a prime power and  $g \leq 2$ . In this article, we assume that  $G$  is a finite group with  $PSL(5, q) \leq G \leq Aut(PSL(5, q))$  and  $G$  acts on the projective points of 4-dimensional projective geometry  $PG(4, q)$ . We show that  $G$  possesses no genus  $g$  group if  $q > 3$ . Furthermore, the connectedness of the Hurwitz space  $H_r^{in}(G)$  are studied for these groups that possess genus zero and one.