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On the rank two geometries of the groups $\mathrm{PSL}(2, q)$: part I

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Abstract

We determine all firm and residually connected rank 2 geometries on which $\mathrm{PSL}(2, q)$ acts flag-transitively, residually weakly primitively and locally two-transitively, where one of the maximal parabolic subgroups is isomorphic to E_q , where E_q denotes an elementary abelian group of order q , or $D_{2n(q)}$, the dihedral group of order $2n(q)$ where $n(q) := (q \pm 1)/\mathrm{gcd}(2, q - 1)$ for some prime-power q .

Keywords: Projective special linear groups, coset geometries, locally s -arc-transitive graphs.

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O geometrijah ranga 2 grup $\text{PSL}(2, q)$: I. del

Povzetek

Določimo vse čvrsto in residualno povezane geometrije ranga 2, na katerih grupa $\text{PSL}(2, q)$ deluje tranzitivno na praporih, residualno šibko primitivno in lokalno 2-tranzitivno, pri čemer je ena od maksimalnih paraboličnih podgrup izomorfna E_q , elementarni Abelovi grupi reda q , ali $D_{2n(q)}$, diedrski grupi reda $2n(q)$, kjer je $n(q) := (q \pm 1)/\text{gcd}(2, q - 1)$ za neko potenco praštevil q .

Ključne besede: Projectivne posebne linearne grupe, geometrije odsekov, lokalno s -ločno-tranzitivni grafi.