

UNAVOIDABLE FLATS IN $\text{GF}(Q)$ -REPRESENTABLE MATROIDS

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(This talk is based on joint work with Jim Geelen and Peter Nelson.)

We prove that, for any finite field $\mathbb{F}$ and any positive integer k , every simple $\mathbb{F}$ -representable matroid of sufficiently high rank contains a rank- k flat which is either an independent set or a projective or affine geometry (over some subfield of $\mathbb{F}$). By combining this result with the classical Ramsey theorems for finite affine and projective geometries due to Graham, Leeb and Rothschild, we obtain a Ramsey theorem for $\text{GF}(q)$ -representable matroids.