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Clones and Arcs in Matroids and Projective Spaces.

Arcs in projective spaces and their bounds have been well studied due to their connections to maximum distance separable codes. Clone sets in matroids have recently been linked to representability over finite fields. Two elements e and f in a matroid M are clones if and only if the mapping that interchanges e and f and fixes all other elements of M is an automorphism. Jakayla Robbins conjectured that the size of a non-trivial clone set in a $GF(q)$ -representable matroid is at most $q - 2$. We will discuss progress towards this bound we have made by examining clone sets in relation to arcs in projective spaces and bounds on the sizes of arcs. (Received December 04, 2012)