Inequivalent representations of matroids

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Abstract. Kahn conjectured that for a fixed finite field $GF(q)$ there is an integer k such that a 3–connected $GF(q)$–representable matroid has at most k inequivalent representations. Unfortunately this conjecture turned out to be false, but evidence is growing that the conjecture is true for 4–connected matroids and more strongly, even for 3–connected matroids that do not have long "paths" of 3–separations.

If true, this conjecture implies that non-representability over $GF(q)$ can be proved in a polynomial number of rank evaluations. It is also likely that a resolution of the conjecture is a necessary step on the way to proving Rota's Conjecture.

This is joint work with Jim Geelen and Bert Gerards.