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Title: Resolving sets in finite projective planes

Summary:

In a graph $\Gamma = (V, E)$ a vertex v is *resolved* by a vertex-set $S = \{v_1, \ldots, v_n\}$ if its (ordered) distance list with respect to S, $(d(v, v_1), \ldots, d(v, v_n))$, is unique. A set $A \subset V$ is resolved by S if all its elements are resolved by S. S is a *resolving set* in Γ if it resolves V. The *metric dimension of* Γ is the size of the smallest resolving set in it. In a bipartite graph a *semi-resolving set* is a set of vertices in one of the vertex classes that resolves the other class.

We examine resolving sets of the incidence graphs of finite projective planes. The following theorem holds:

Theorem. *The metric dimension of any projective plane of order $q \geq 23$ is $4q - 4$.*

In the talk we sketch the proof of the above theorem and describe all resolving sets of that size.