Rigidity and movability of configurations in the projective plane

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Abstract: Configurations of points and lines in the plane have a long history. The Theorem of Pappus from the fourth century begins a classical theory that has been advanced by Desargues, Pascal, Cayley, Steinitz, Grassman and many others. The study of such objects and their generalizations has deep roots in algebra, geometry, topology and combinatorics.

In this talk we discuss recent work which is the result of regarding these classical structures as geometric constraint systems. The objects of interest then become the topology, geometry, and parameterizations of the space of realizations of a configuration. Some of the tools derive from those developed by civil and mechanical engineers in the analysis of the statics of structures and the kinematics of linkages.