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Realizations of phased matroids. Preliminary report.

A matroid is a combinatorial abstraction of linear independence in vector spaces.

A phased matroid is a matroid with additional structure which plays the same role for complex vector arrangements that oriented matroids play for real vector arrangements.

The realization space of an oriented (resp., phased) matroid is the space of vector arrangements in $\mathbb{R}^n$ (resp., $\mathbb{C}^n$) that correspond to oriented (resp., phased) matroid, modulo a change of coordinates.

In this talk, we will define, matroids, oriented matroids, and phased matroids, their similarities, and their surprisingly different realization spaces. (Received September 18, 2015)