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### Matroids Over Hyperfields

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#### Abstract for the Combinatorics Seminar 2016 April 19, 26; May 3

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I'll present an algebraic framework which simultaneously generalizes the notions of linear subspaces, matroids, oriented matroids, and phased matroids. The resulting objects are called “matroids over hyperfields”.

A hyperfield is like a field with multivalued addition. A matroid over a hyperfield is defined in terms of valued circuits and a Grassman-Plücker function. These are cryptomorphic (they are distinct but equivalent structures). They specialize to those of ordinary matroids, oriented matroids, and phased matroids by taking appropriate hyperfields.

These talks are from a new paper by Matthew Baker, “Matroids over hyperfields”.

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