Meeting: 1003, Atlanta, Georgia, SS 35A, AMS-MAA Special Session on Tropical Geometry, I

1003-05-1358 **David E Speyer*** (speyer@math.berkeley.edu), Department of Mathematics, UC Berkeley, 970 Evans Hall #3840, Berkeley, CA 94720. *Tropical Linear Spaces.*

Let K denote the field of Laurent Series with real exponents and complex coefficients and let $v : K^* \to \mathbb{R}$ be the map that takes a power series to the exponent of its lowest degree term. If $X \subset K^n$ is any variety, we define Trop X to be the image of $v : X \cap (K^*)^n \to \mathbb{R}^n$. Trop X is a polyhedral complex, whose geometry is hoped to reflect the geometry of $X \cap (K^*)^n$.

In this talk, we discuss the case where X is a linear subspace of K^n, so $X \cap (K^*)^n$ is a hyperplane arrangement. Then the study of Trop X becomes very combinatoreal and can be described in terms of polyhedral decompositions of the hypersimplex arising from certain collections of matroids. We give a full description of all possible combinatorics when $\dim X = 2$ and (relying on work of Ardila and Klivans) of the local geometry of Trop X. We will then describe a precise conjecture and some partial results concerning the maximal f-vectors in the general case. (Received October 05, 2004)