

# Tropical Nets and Hyperplane Arrangements

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A finite hyperplane arrangement is a finite set of affine hyperplanes over a projective space over a field. If the space is the projective plane, then the arrangement is called a line arrangement. A  $k$ -net is a special line configuration in the projective plane. There are several uses of  $k$ -nets in geometry and combinatorics which I will try to outline some of them in my talk. Also there are some restrictions on existence of  $k$ -nets discovered by S. Yuzvinsky and some open problems remain.

One way to understand tropical algebraic geometry is looking at certain limits of complex algebraic varieties under the logarithm map. It may be easier to deal with the tropical counterparts of the classical problems because we can use combinatorics extensively on these simpler objects. In this study we define tropical nets (with my advisor A.U.Özgür Kişisel). In order to do this, by looking at different limit sets for a given  $k$ -net, we get different tropicalizations. We are trying to improve this definition, as it is, we show that every  $k$ -net produces a tropical net and sketch tropical versions of the known  $k$ -nets.