

## Tropicalization in Real Algebraic Geometry and Extremal Combinatorics

Blekherman, Greg - Georgia Tech

A set  $S$  in the nonnegative orthant of  $\mathbb{R}^n$  has Hadamard property if it is closed under coordinatewise multiplication. Tropicalization of  $S$  with Hadamard property records all pure binomial inequalities valid on  $S$ . Interesting examples of sets with Hadamard property are: cones of moments of measures supported on the nonnegative orthant or  $(0,1)$ -hypercube, cones of pseudo-moments (duals to sums of squares) and graph density profiles in extremal combinatorics. I will discuss some results and open questions; we can describe all pure binomial inequalities in moments of measures and contrast that with such inequalities that can be learned via sums of squares.