

Complexes of oriented matroids and their tope graphs

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Complexes of oriented matroids (COMs) arise from the combinatorics of a real hyperplane arrangement intersected with an open convex set. They generalize (affine) oriented matroids and capture various other classes such as convex geometries, antimatroids, CAT(0)-cube and Coxeter complexes, lopsided and ample set systems. I will give a gentle introduction and then focus on the tope graph of a COM - an object that determines the COM up to isomorphism. I will present a purely graph theoretic polynomial time verifiable characterization that specializes to oriented matroids.