

FEDERICO ARDILA
Massachusetts Institute of Technology

Tutte Polynomials of Hyperplane Arrangements

Answering a question of Vic Reiner, we show how to define the Tutte polynomial of a finite subspace arrangement, and investigate its properties. For a central arrangement of hyperplanes, this definition coincides with the Tutte polynomial of the associated matroid. Many of the known combinatorial interpretations of specializations of $T(x, y)$ for matroids extend easily to hyperplane arrangements. Some results extend with more difficulty, and others do not extend at all.

We also present an interpretation of the Tutte polynomial of an arrangement in terms of enumeration in finite fields. Greene's result on the weight enumerator of a linear code follows as a corollary. This interpretation allows us to compute the Tutte polynomials for several families of hyperplane arrangements. It also reveals connections between computation of Tutte polynomials and enumeration of words according to certain statistics.