

Mixed volumes of normal complexes

In 2021, Nathanson and Ross demonstrated that a geometric object called a normal complex is the correct object to unite the algebraic concept of a tropical fan's volume polynomial with an actual geometric volume computation. That same year, expanding on the work of Adiprasito, Huh, and Katz in proving log-concavity in characteristic polynomials of matroids, Amini and Piquerez established that mixed degrees of divisors of certain classes of tropical fans are log-concave. Given that mixed volumes also generate log-concave sequences, we develop a definition of mixed volumes of normal complexes and use our theory to establish new techniques for determining log-concavity for mixed degrees of divisors of a broad class of tropical fans.