1125-05-1150   **Matt Baker*** (`mbaker@math.gatech.edu`). *Hodge Theory in Combinatorics.*
In 2015, Karim Adiprasito, June Huh, and Eric Katz announced a proof of a 50-year old conjecture of Heron, Rota, and Welsh asserting that the coefficients of the characteristic polynomial of a matroid form a log-concave sequence. The proof of this conjecture establishes far more: the authors prove combinatorial analogues of Poincare duality, the hard Lefschetz theorem, and the Hodge-Riemann relations for the Chow ring of an arbitrary matroid. This work opens up new horizons in both algebraic geometry and combinatorics, applying deep algebro-geometric intuition to a combinatorial problem with no direct link to algebraic geometry. (Received September 15, 2016)