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*Hilbert functions for Chow rings of uniform matroids and their  $q$ -analogues.*

In their celebrated recent proof of the Rota-Heron-Welsh and Mason conjectures, Adiprasito, Huh, and Katz showed that the Chow ring of a matroid satisfies Poincare duality, the hard Lefschetz theorem, and the Hodge-Riemann inequalities. In particular, the Hilbert function of such a Chow ring always forms a symmetric, unimodal sequence.

We report here on REU work of three of the authors interpreting these Hilbert functions combinatorially for all uniform matroids and for their finite field vector space  $q$ -analogues. In particular, for the full vector space matroid, one recovers a  $q$ -Eulerian polynomial studied by Shareshian and Wachs. (Received September 09, 2017)