

Edelman-Reiner conjecture revisited

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The finite truncations of affine Weyl arrangements have rich combinatorial structures. In 1996 Edelman and Reiner conjectured the freeness of Catalan and Shi arrangements for root systems. After lots of progress by several researchers, including Athanasiadis and Terao, the conjecture was settled by the speaker in 2004. One of the crucial steps was the freeness of multiarrangements, which is closely related to Hodge filtration defined by K. Saito.

Recently, several new aspects of Catalan and Shi arrangements in connection with Edelman-Reiner conjecture have been discovered, e.g., relations with Ehrhart theory, and study of quantum integrable systems. We will discuss some of recent developments.