

Chow rings and augmented Chow rings of matroids are equivariant γ -positive

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Chow rings and augmented Chow rings of matroids were considered and played important roles in the settlement of the Heron-Rota-Welsh conjecture and the Dowling-Wilson top-heavy conjecture. Their Hilbert series have been extensively studied since then. It was shown by Ferroni, Mathern, Steven, and Vecchi, and independently by Wang, that the Hilbert series of Chow rings of matroids are γ -positive using inductive argument from semismall decompositions. However, they do not have an interpretation for the coefficients in the γ -expansion. In the recent paper, Angarone, Nathanson, and Reiner conjectured that Chow ring of matroids are equivariant γ -positive under the action of groups of automorphisms of matroids. We prove this conjecture, showing that both Chow rings and augmented Chow rings of matroids are equivariant γ -positive. Moreover, we obtain explicit descriptions for the coefficients of the equivariant γ -expansions.

Primary author: LIAO, Hsin-Chieh (University of Miami)

Presenter: LIAO, Hsin-Chieh (University of Miami)