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A combinatorial proof of the type A quiver component formula

The K-theoretic quiver component formula expresses the K-polynomial of a type A quiver locus as an alternating sum of products of double Grothendieck polynomials. This formula was conjectured by A. Buch and R. Rimányi and later proved by R. Kinser, A. Knutson, and the speaker using geometric methods.

After motivating the study of this and related formulas, I will outline this geometric proof. Then I will explain the ingredients of a new proof of this formula which replaces Gröbner degenerations by combinatorics. This latter work is the outcome of an undergraduate summer research project with Aidan Lindberg.