Links in the complex of weakly separated collections (Extended Abstract)

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Abstract

Plabic graphs are combinatorial objects used to study the totally nonnegative Grassmannian. Faces of plabic graphs are labeled by k-element sets of positive integers, and a collection of such k-element sets are the face labels of a plabic graph if that collection forms a maximal weakly separated collection. There are moves that one can apply to plabic graphs, and thus to maximal weakly separated collections, analogous to mutations of seeds in cluster algebras. In this short note, we show if two maximal weakly separated collections can be mutated from one to another, then one can do so while freezing the face labels they have in common. In particular, this provides a new, and we think simpler, proof of Postnikov's result that any two reduced plabic graphs with the same decorated permutations can be mutated to each other.

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