Quasi-isomorphisms of cluster algebras and the combinatorics of webs (extended abstract)

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Abstract

We provide bijections between the cluster variables (and clusters) in two families of cluster algebras which have received considerable attention. These cluster algebras are the ones associated with certain Grassmannians of k-planes, and those associated with certain spaces of decorated SLk-local systems in the disk in the work of Fock and Goncharov. When k is 3, this bijection can be described explicitly using the combinatorics of Kuperberg's basis of non-elliptic webs. Using our bijection and symmetries of these cluster algebras, we provide evidence for conjectures of Fomin and Pylyavskyy concerning cluster variables in Grassmannians of 3-planes. We also prove their conjecture that there are infinitely many indecomposable nonarborizable webs in the Grassmannian of 3-planes in 9-dimensional space.

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