Braid group symmetries of Grassmannian cluster algebras.

We will give an introduction to the cluster structure on the Grassmannian $\text{Gr}(k,n)$, including some conjectures of Fomin and Pylyavskyy describing the cluster combinatorics for $\text{Gr}(3,n)$ in terms of planar diagrams known as webs. We will describe an action of the $k$-strand braid group on the set of clusters for $\text{Gr}(k, n)$, whenever $k$ divides $n$. This action preserves the underlying quivers, defining a homomorphism from the braid group to the "cluster modular group," which is a notion of a symmetry group of a cluster algebra. Using the braid group action, we prove the Fomin-Pylyavksyy conjectures for the Grassmannians $\text{Gr}(3,9)$ and $\text{Gr}(4,8)$. (Received July 17, 2017)