Linhui Shen* (linhui@math.msu.edu). Grassmannians and cyclic sieving.

The Grassmannian $Gr(k, n)$ parametrizes $k$-dimensional subspaces in $\mathbb{C}^n$. Due to work of Scott, its homogenous coordinate ring $\mathbb{C}[Gr(k, n)]$ is a cluster algebra of geometric type. We introduce a periodic configuration space $X(k, n)$ equipped with a natural potential function $W$. We prove that the tropicalization of $(X(k, n), W)$ canonically parametrizes a linear basis of $\mathbb{C}[Gr(k, n)]$, as expected by the Duality Conjecture of Fock-Goncharov. We identify the tropical set of $(X(k, n), W)$ with the set of plane partitions. As an application, we show a cyclic sieving phenomenon involving the latter. This talk is based on joint work with Daping Weng. (Received August 04, 2018)