

PLABIC GRAPHS AND THE TOTALLY NONNEGATIVE GRASSMANNIAN

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ABSTRACT

In this talk, I will introduce the Grassmannian $Gr(k, n)$, which is the space of k -dimensional subspaces in \mathbb{R}^n , or the space of all $k \times n$ matrices of rank k modulo row operations. The totally nonnegative Grassmannian is the subset of elements from $Gr(k, n)$ which have nonnegative Plücker coordinates. I will also introduce a special type of planar bicolored graph called the plabic graph. This graph is drawn in a disk, with boundary vertices numbered $1, \dots, n$ and internal vertices colored either black or white. Through an example, I will demonstrate how several fun little games on a plabic graph reveal a fascinating link to the totally nonnegative Grassmannians.