

This is joint with C. Procesi and M. Vergne.

Given a sequence $X = (a_1, \dots, a_m)$ of positive integers, the partition function $\mathcal{P}_X(n)$ computes the number of solutions of the equation

$$\sum_{j=1}^m x_j a_j = n, \quad x_j \in \mathbb{Z}^{\geq 0}.$$

More generally we can consider the vector case in which X consists of vectors in a lattice Λ lying on the same side of some hyperplane.

I will introduce some spaces of functions on Λ and explain how to use them to give a new simple proof of the local quasi-polynomiality of \mathcal{P}_X .

If G is the torus having Λ as character group and M the linear representation of G whose list of weights is X , these spaces give the range of the index map for G -transversally elliptic operators on M .