

Prof. Ming-Hsuan Kang / Department of Applied Mathematics

Operator Theory, Matrix Analysis, Numerical Ranges

My research interests include algebraic groups, representation theory and its application. My collaborator and I have a series of works about zeta functions of complexes, which are classifying spaces of uniform lattices in the algebraic groups. We are also interested in the spectral behavior of these zeta functions, like the distributions of zero and poles.

Besides, we are also interested in the philosophy of the field with one element, which reduces the problems on p-adic algebraic groups to the problems on affine Weyl groups. We also have some works on Generalized Poincaré series on affine Weyl groups and Iwahori-Hecke algebras.

On the other hand, we are also very interested in the applications of pure mathematics in other disciplines. For instance, we apply the theory of extremal lattices and representation theory to spherical Monte Carlo methods. Moreover, we also use representation theory to study the spectral properties of toroidal fullerenes.