Thomas Huettemann (Queen's University, Belfast)

Jump loci for ranks of matrices

Abstract

Let R be a commutative integral domain. A group homomorphism $p : Z^s \to Z^t$ gives a ring homomorphism $p^* : R[Z^s] \to R[Z^t]$ of group rings. Let A be a matrix with entries in $R[Z^s]$. Depending on p, the matrix $p^*(A)$ may have smaller rank than A. The set of such p has been investigated by Kohno and Pajitnov, giving a surprising description of the jump loci.

In this talk I will present joint work with Zuhong Zhang, extending the results to a more general notion of jump loci. The new setup works for arbitrary commutative rings, and includes as a special case the notion of McCoy-rank of matrices.