

Some applications of algebraic coding theory

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Abstract: In this talk, we present a wealth of interconnections between commutative algebra, algebraic geometry, and combinatorics, and the areas of coding theory and its applications, such as quantum computation, distributed storage, matrix multiplication, and cryptography. We will see how the Frobenius number of certain numerical semigroups; the study of curves, including the Weierstrass semigroup and the Riemann-Roch space associated with special divisors; the properties of vanishing ideals like Grobner bases, Hilbert functions, footprints, or being Gorenstein; and the counting of lattice points, such as integer points inside of certain polyhedra, play roles in these applications.