Algebra and Number Theory Seminar

Dr David Karpuk (Aalto University, Finland)

will speak on

Probability Bounds for Algebraic Lattice Codes

Mon 25th March 2013 at 4:00PM

Location: CASL Seminar Room – Belfield Office Park

Lattices which arise from totally real algebraic number ?elds have many applications to the coding theory of fading channels, which arise naturally in the context of wireless communications. One can naturally attach to the ring of integers of a number ?eld K of degree n over $\mathbf{Q}$ a lattice in $\mathbf{R}^n$, from which one can carve a ?nite codebook in a natural way. We will show how familiar number theoretic invariants of K, such as its regulator and values of its Dedekind zeta function, control the probability that the corresponding codebook provides reliable transmission over a fading channel. We will also discuss generalizations to codes built from central simple algebras.

This talk is part of the **Algebra and Number Theory** series. For more, see
`https://maths.ucd.ie/seminars`