



Algebra and Number Theory Seminar

Title: On the Parameters of Codes With Two Homogeneous Weights

Speaker: Eimear Byrne (Sch. Math. Sci., UCD)

Date: Mon 13th September 2010 at 4:00PM

Location: Mathematical Sciences Seminar Room

Abstract: In 1972 Delsarte showed that for any projective linear code over a finite field of characteristic p with two non-zero Hamming weights a and b there exists a positive integer u and such that $a = q u$ and $b = q(u+1)$, where q is a power of p . In fact this emerges as a corollary to his proof that projective two-weight codes have Cayley graphs that are strongly regular. In this talk we show that for any regular projective linear code C over a finite Frobenius ring with two integral non-zero homogeneous weights a and b , there is a positive integer d , a divisor of $|C|$, and a positive integer u such that $a = d u$ and $b = d(u+1)$. We also give a new proof of the known result that two-weight codes over finite Frobenius rings yield strongly regular graphs. These results can be used to give useful restrictions on the parameters of any of the associated strongly regular graphs.