



Seminar

## K-Theory, Quadratic Forms and Number Theory

**Title:** Generalising Stickelberger: Annihilators (and more) for class groups of number fields

**Speaker:** Dr. David Solomon (King's College London)

**Date:** Wed 24th March 2010 at 4:00PM

**Location:** Mathematical Sciences Seminar Room

**Abstract:** Stickelberger's Theorem (from 1890) gives an explicit ideal in the Galois group-ring which annihilates the minus-part of the class group of a cyclotomic field. In the 1980's Tate and Brumer proposed a generalisation (the 'Brumer-Stark conjecture') for any abelian extension of number fields  $K/k$ , with  $K$  of CM type and  $k$  totally real.

Both the theorem and the conjecture leave certain questions unanswered: Is the (generalised) Stickelberger ideal the full annihilator, the Fitting ideal or what? And, at a more basic level, what can we say in the plus part, e.g., for a real abelian field? I shall discuss possible answers, some still conjectural, to pieces of these puzzles, using two new  $p$ -adic ideals of the group ring.