



## Algebra and Number Theory Seminar

**Title:** Finite semifields and Galois geometry

**Speaker:** Dr Michel Lavrauw (Ghent University)

**Date:** Mon 15th November 2010 at 4:00PM

**Location:** Mathematical Sciences Seminar Room

**Abstract:** In this talk, we concentrate on the links between Galois geometry and a particular kind of non-associative algebras of finite dimension over a finite field, called finite semifields. Although in the earlier literature (predating 1965) the term semifields was not used, the study of these algebras was initiated about a century ago by Dickson [1], shortly after the classification of finite fields, taking a purely algebraic point of view. Nowadays it is common to use the term semifields introduced by Knuth in 1965 [2]. By now, the theory of semifields has become of considerable interest in different areas of mathematics. In this talk we will give an approach to finite semifields based on its connections with various structures in Galois geometry [3].

[1] L. E. Dickson, On Commutative Linear Algebras in which Division is Always Uniquely Possible, *Trans. Amer. Math. Soc.*, 7 (1906), pp.514–522.

[2] D. E. Knuth, Finite Semifields and Projective Planes, *J. Algebra*, 2 (1965), pp. 182–217.

[3] M. Lavrauw and O. Polverino, Finite Semifields, chapter to appear in Current Research Topics in Galois Geometries, Eds J. De Beule and L. Storme, Nova Academic Publishers.