Algebra and Number Theory Seminar

Title: Finite Semifields, Semilinear Transformations and Skew Polynomial Rings

Speaker: John Sheekey (Sch. Math. Sci., UCD)

Date: Mon 24th January 2011 at 3:00PM

Location: Mathematical Sciences Seminar Room

Abstract: Finite semifields are division algebras in which multiplication is not assumed to be associative. The number of semifields of a given order (up to isotopy) is known only up to size 243.

An interesting family of semifields are the Johnson-Jha semifields, which are constructed using irreducible semilinear transformations. In this talk we investigate the number of isotopy classes arising from this construction. We reinterpret these semifields in terms of skew polynomial rings, calculate the number of conjugacy classes of irreducible semilinear transformations, and provide a new upper bound for the number of isotopy classes.