Algebra and Number Theory Seminar

Title: Some Results on Linearized Trinomials that Split Completely

Speaker: Daniela Mueller (UCD)

Date: Thu 21st November 2019 at 2:00PM

Location: Seminar Room SCN 1.25

Abstract: Linearized polynomials over finite fields have been much studied over the last several decades. Recently there has been a renewed interest in linearized polynomials because of new connections to coding theory and finite geometry. We consider the problem of calculating the rank or nullity of a linearized polynomial $L(x)$ from its coefficients. The rank and nullity of $L(x)$ are the rank and nullity of the associated F_q-linear map $F_{q^n} -> F_{q^n}$. McGuire and Sheekey defined a d x d matrix A_L with the property that nullity(L) = nullity($A_L - I$). We present some consequences of this result for the ranks of particular types of linearized trinomials. For example, we are able to generalize a result of Csajbok, Marino, Polverino and Zhou which states that $ax + bx^q + cx^{q^3}$ (where a, b, c are in F_{q^7}) cannot have q^3 roots in F_{q^7} if q is odd.

https://maths.ucd.ie/ kazim$_b$/$UCD_ANT_Seminar.html$