1086-11-1355 **Dermot McCarthy*** (mccarthy@math.tamu.edu). *The trace of Frobenius of elliptic curves and the p-adic gamma function.*

In this talk we will introduce a new function which is defined in terms of quotients of the p-adic gamma function. This function extends hypergeometric functions over finite fields to the p-adic setting. We will outline recent work in which we prove that, for primes $p > 3$, the trace of Frobenius of any elliptic curve over $\mathbb{F}_p$, whose j-invariant does not equal 0 or 1728, is just a special value of this function. This generalizes results of Fuselier and Lennon which evaluate the trace of Frobenius in terms of hypergeometric functions over $\mathbb{F}_p$ when $p \equiv 1 \pmod{12}$. (Received September 21, 2012)