

1135-12-1705 **Dawn C. Nelson*** (dnelson1@saintpeters.edu). *Permutation polynomial research with beginning undergraduates*. Preliminary report.

Lidl and Mullen challenged: “Consider the binomial $f(x) = x^k + ax^j$ with $k > j \geq 1$, $\gcd(k, j) = 1$, and $a \in F_q^*$. Determine conditions on k, j and q so that $f(x)$ permutes F_q .” By considering the question for F_p (with p prime), this challenge can be tackled by beginning undergraduate students.

In this talk, I describe how a student (whose highest level math class was AP Calculus) used Mathematica to study permutation binomials. The student was able to enumerate a comprehensive list of conditions on k, j and p . I explain her results and conjectures. The talk finishes with a list of several level-appropriate open questions. (Received September 24, 2017)