1145-VV-893 **Laura Mora-Mercado*** (laura.mora2@upr.edu), 25 Calle los Rotarios, Isabela, PR 00662.

Some Criteria for Permutation Binomials over Finite Fields.

A Permutation Binomial $f = x^r + Bx^s$ over a finite field with p elements, p prime, is a function that permutes the elements of the field. Criteria to determine when a binomial is a Permutation Binomial are scarce. Due to its applications, including to cryptography, we want to focus to find criteria for a family of binomials of the form $f = x^{p-4} + Bx^{\frac{p-7}{2}}$, to be Permutation Binomials.We proved that no such binomials can be found if p is of the form $3k + 4$, moreover we found a relationship between the distribution of quadratic residues over the field and the capacity of f to permute its elements. That is, we found criteria for f to be a Permutation Binomials in terms of the position of B among such quadratic residues. Also we found a suitable formula for the inverse of f.We will present such results and future plans involving the inverse of f. (Received September 17, 2018)