University of Puerto Rico, Río Piedras
Department of Mathematics

PHD DEFENSE

AUTOTOPISM GROUP OF PRE-SEMIFIELDS DEFINED BY A PRODUCT OF 3-TERM

Walter Meléndez

Abstract

Let $K = GF(p^n)$ be the Galois field of order p^n, $p \geqslant 3$ prime and $n \geqslant 4$. Let $A, B \in K^*$ be constants and $\alpha \neq \beta$ non-trivial automorphism of K such that the 3-term product $x \circ y = xy + Ax^{\alpha}y^{\beta} + Bx^{\beta}y^{\alpha}$ defines a pre-semifield P over K. Aponte and Figueroa conjectured that if the autotopism group of P admits an autotopism of order a p-primitive prime divisor of $p^n - 1$ then it is a subgroup of $\Gamma L(K) \times \Gamma L(K)$. In this thesis we study this conjecture by analyzing some particular pre-semifields and we give a sufficient condition to prove it. Also, we find the autotopism group of a particular pre-semifield defined by a 3-term product to show the necessity of the hypothesis in the Aponte and Figueroa conjecture.

Date: Friday, June 29, 2012
Room: *TBA*
Time: 3:15 p.m.