1067-14-1656 **Gretchen L. Matthews** (gmatthe@clemson.edu), Department of Mathematical Sciences, Clemson University, Clemson, SC 29634-0975, and **Justin D. Peachey*** (jpeache@clemson.edu), Department of Mathematical Sciences, Clemson University, Clemson, SC 29634-0975. *On Weierstrass semigroups of m-tuples of places on function fields associated with linearized polynomials.*

Let q be a power of a prime and $\mathbb{F}_q$ denote the field with q elements. Given a function field $F/\mathbb{F}_q$ and places $P_1, \ldots, P_m$ of degree one, the Weierstrass semigroup $H(P_1, \ldots, P_m)$ is the set of $\mathbf{v} \in \mathbb{N}^m$ such that there exists a function $f \in F$ with poles only at the $P_1, \ldots, P_m$ and the pole order at P_i is v_i for all $1 \leq i \leq m$. For $m = 1$, its complement is the classically studied Weierstrass gap set.

In this talk we consider the function field $\mathbb{F}_{q^r}(x, y)/\mathbb{F}_{q^r}$ defined by

$$x^u = L(y),$$

where $u | \frac{q^r-1}{q-1}$ and $L(y) = \sum_{i=0}^{d} a_i y^{q^i}$ is a linearized polynomial with $a_0, a_d \neq 0$ and q^d distinct roots in $\mathbb{F}_{q^r}$. The Hermitian and norm-trace function fields are special cases of this function field. We determine the Weierstrass semigroup $H(P_\infty, P_{0b_2}, \ldots, P_{0b_m})$ where $2 \leq m \leq q^d + 1$ and give several examples. (Received September 22, 2010)