1061-05-113 **M. Gabriela Araujo-Pardo*** (garaujo@math.unam.mx), Instituto de Matemáticas, Circuito Exterior s/n, Ciudad Universitaria, 04510 México D.F., Mexico, and **Camino Balbuena**, **Luis Montejano** and **Juan Carlos Valenzuela**. *Partial linear spaces and identifying codes.*

Let $(\mathcal{P}, \mathcal{L}, I)$ be a partial linear space and $X \subseteq \mathcal{P} \cup \mathcal{L}$. Let us denote by $(X)_I = \bigcup_{x \in X} \{y : yIx\}$ and by $[X] = (X)_I \cup X$. With this terminology a *partial linear space* $(\mathcal{P}, \mathcal{L}, I)$ *is said to admit a* $(1, \leq k)$*-identifying code* if and only if the sets $[X]$ are mutually different for all $X \subseteq \mathcal{P} \cup \mathcal{L}$ with $|X| \leq k$.

In this talk, we give a characterization of k-regular partial linear spaces admitting a $(1, \leq k)$-identifying code. Equivalently, we give a characterization of k-regular bipartite graphs of girth at least six admitting a $(1, \leq k)$-identifying code. That is, k-regular bipartite graphs of girth at least six admitting a set C of vertices such that the sets $N[x] \cap C$ are nonempty and pairwise distinct for all vertex $x \in X$ where X is a subset of vertices of $|X| \leq k$. Moreover, we present a family of k-regular partial linear spaces on $2(k-1)^2 + k$ points and $2(k-1)^2 + k$ lines whose incidence graphs do not admit a $(1, \leq k)$-identifying code. Finally, we show that the smallest $(k; 6)$-graphs known up to now for $k - 1$ not a prime power admit a $(1, \leq k)$-identifying code. (Received April 09, 2010)