1086-VN-2632 **Amanda J Watkins Niedzialomski*** (amanda-watkins@uiowa.edu). *Cartesian powers of graphs and consecutive radio labelings.*

For $k \in \mathbb{Z}^+$, a k-radio labeling f of a graph requires all pairs of distinct vertices u and v to satisfy $|f(u) - f(v)| \geq k + 1 - d(u, v)$. When $k = 1$, this requirement gives rise to the familiar labeling known as vertex coloring for which each vertex of a graph is labeled so that adjacent vertices have different "colors". We consider k-radio labelings of G when $k = diam(G)$. In this setting, no two vertices can have the same label, so graphs that have radio labelings of consecutive integers are one extreme on the spectrum of possibilities (because they use the smallest labels). Examples of such graphs of high diameter are especially rare and desirable. We construct examples of arbitrarily high diameter using the Cartesian product of graphs. (Received September 25, 2012)