1086-00-2694 **Stefaan Dirk Delcroix*** (sdelcroix@csufresno.edu). *The Hausdorff dimension of a graph-directed set whose underlying multigraph is a Cartesian product or a tensor product of multigraphs.*

We can associate a graph-directed set K and a weighted incidence matrix A with a given strongly connected, directed multigraph G, a sequence of subsets of $\mathbb{R}^d$ and a sequence of contraction similarities. For $s \geq 0$, we put $A(s) = (a_{i,j}^s)$. Let $\rho(s)$ be the spectral radius of $A(s)$. Then the Hausdorff dimension of K is the unique solution to $\rho(s) = 1$.

We use the above result to compute the Hausdorff dimension of graph-directed sets when G is either the direct product or the tensor product of a finite collection of strongly connected directed multigraphs. We give explicit formulas in terms of the eigenvalues of the graph and the similarity ratios used with each graph. (Received September 25, 2012)