1056-51-116 **Steven Schlicker*** (schlicks@gvsu.edu), Department of Mathematics, Grand Valley State University, 1 Campus Drive, Allendale, MI 49401, and **Katrina Honigs**, University of California, Berkeley. *Edge Coverings of Bipartite Graphs and the Geometry of the Hausdorff Metric.*

An edge covering of a graph $G = \{V, E\}$ is a subset E' of E so that each vertex in V has at least one incident edge in E'. Edge coverings of bipartite graphs have applications to the strange and non-intuitive geometry that the Hausdorff metric imposes on the space $\mathcal{H}(\mathbb{R}^n)$ of all non-empty compact subsets of $\mathbb{R}^n$. In particular, edge coverings of bipartite graphs provide insight into the behavior of configurations in this geometry. A configuration is a pair $[A, B]$ of elements in $\mathcal{H}(\mathbb{R}^n)$ for which there can be a finite number, denoted $\#([A, B])$, of elements in $\mathcal{H}(\mathbb{R}^n)$ at each location on the line segment between A and B. Configurations exist so that $\#([A, B]) = k$ for infinitely many different values of k, and for $1 \leq k \leq 36$ with the exception of $k = 19$. Surprisingly, there are no configurations $[A, B]$ for which $\#([A, B]) = 19$. Edge coverings of bipartite graphs can be used to prove this result as well as extend it to show that there are no configurations $[A, B]$ for which $\#([A, B]) = 37$. (Received July 28, 2009)