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Darren Narayan*, School of Mathematical Sciences, Rochester Institute of Technology, Rochester, NY 14612, **Rigoberto Florez**, Department of Mathematics and CS, Charleston, SC 29409, **Ruth Lopez**, Department of Mathematics and Statistics, California State University, Long Beach, Long Beach, CA 90840, and **Jacob Worrell**, Dept. of Psychological and Brain Sciences, Indiana University, Bloomington, IN 47405. *A graph theoretic analysis of co-branding in social networks.*

Social networks such as Twitter and Instagram have an underlying graph structure that change as relationships are created or ended. In some cases people merge their sites and present their relationship as a single unit. This can be modeled through edge contraction where two adjacent vertices u and v in a graph G are merged to form a single vertex uv . The edges incident to uv in the new graph are the edges incident to either u or v (but not both) in the original graph. We examine the impact of edge contraction on graph properties such as betweenness centrality, closeness centrality, and leverage centrality. (Received September 14, 2016)