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Jeong-Ok Choi (jeong.choi@trincoll.edu), Mathematics Department, Trinity College, Hartford, 06106, **John P. Georges** (john.georges@trincoll.edu), Mathematics Department, Trinity College, Hartford, CT 06106, **David W. Mauro*** (david.mauro@trincoll.edu), Mathematics Department, Trinity College, Hartford, CT 06106, and **Yan Wang** (wangy@millsaps.edu), Department of Mathematics, Millsaps College, Jackson, MS 39210. *On real number labellings and graph invertibility.*

For non-negative real x_0 and simple graph G , $\lambda_{x_0,1}(G)$ is the minimum span over all labellings that assign real numbers to the vertices of G such that adjacent vertices receive labels that differ by at least x_0 and vertices at distance two receive labels that differ by at least 1. In this paper, we introduce the concept of λ -invertibility: G is λ -invertible if and only if for all positive x , $\lambda_{x,1}(G) = x\lambda_{\frac{1}{x},1}(G^c)$. We explore the conditions under which a graph is λ -invertible, and apply the results to the calculation of the function $\lambda_{x,1}(G)$ for certain λ -invertible graphs G . We give families of λ -invertible graphs, including certain Kneser graphs, line graphs of complete multipartite graphs, and self-complementary graphs. We also derive the complete list of all λ -invertible graphs with maximum degree 3. (Received September 21, 2011)