1023-05-655 **John P. Georges**, **David Mauro** and **Yan Wang*** (`yan.wang@trincoll.edu`), Department of Mathematics, Trinity College, 300 Summit Street, Hartford, CT 06106. *Some results on graphs with non-surjective optimal $L(2,1)$-labelings.*

An assignment of non-negative integers to the vertices of graph G is called an $L(2,1)$-labeling if and only if the labels of adjacent vertices differ by at least 2 and the labels of vertices at distance two are different. The λ-number of G, denoted $\lambda(G)$, is the smallest integer k for which there exists an $L(2,1)$-labeling of G into $\{0,1,2,3,\ldots,k\}$. Any $L(2,1)$-labeling with span $\lambda(G)$ is called a λ-labeling of G. If L is a λ-labeling of G, then for $h \in \{1,2,\ldots,\lambda(G)-1\}$, h is a hole of L if and only if h is not in the image of L. For fixed graph G, $\rho(G)$ is the minimum number of holes taken over all λ-labelings of G. In this paper, we find a sufficient condition with respect to a new parameter $\zeta(G)$ for a graph to have the property that $\rho(G) = \Delta(G)$, and provide several families of graphs satisfying the condition, which include graphs obtained from Moore graphs with girth 5. Finally we show that this condition is not necessary by providing examples of graphs with $\rho(G) = \Delta(G)$ that violate this condition. (Received September 25, 2006)