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Jerrold R. Griggs* (griggs@math.sc.edu), Department of Mathematics, University of South Carolina, Columbia, SC 29208. *The Δ^2 Conjecture for Graph Labellings with Separation Conditions.*

In 1988 Roberts described a problem posed to him by Lanfear concerning the efficient assignment of channels to a network of transmitters in the plane. To understand this problem, Griggs and Yeh introduced the theory of integer vertex λ -labellings of a graph G . To prevent interference, labels for nearby vertices must be separated by specified amounts k_i depending on the distance i , $1 \leq i \leq p$. One seeks the minimum span of such a labelling. The $p = 2$ case with $k_1 = 2$ and $k_2 = 1$ has attracted the most attention, particularly the tantalizing conjecture that for such “ $L(2, 1)$ ”-labellings, if G has maximum degree $\Delta \geq 2$, then the minimum span is at most Δ^2 . It has now been proven for all sufficiently large Δ , but remains open for small Δ , even for $\Delta = 3$. (Received September 16, 2011)