1056-05-60 **Patrick Bahls*** (pbahls@unca.edu), CPO #2350, One University Heights, Asheville, NC 28804-8511. *The $L(2,1)$ channel-assignment problem on trees.* Preliminary report.

Let $G = (V, E)$ be a simple graph. We say that a non-negative integer labeling ℓ of its vertices V is called an $L(2,1)$-*labeling* if for every pair $\{u, v\}$ of adjacent vertices $|\ell(u) - \ell(v)| \geq 2$, and for every pair $\{u, v\}$ satisfying $\rho(u, v) = 2$, $|\ell(u) - \ell(v)| \geq 1$, where ρ is the usual path metric on V. (Such labelings model the assignment of non-interfering "channels" to nearby radio transmitters.) The $L(2,1)$-*span* of a graph G, $\lambda(G)$, is defined to be the minimum value, over all $L(2,1)$-labelings of G, of $\max_{v \in V} \ell(v)$.

In 1992 J.R. Griggs and R.K. Yeh proved that for a tree T with maximal vertex degree Δ, $\lambda(T) \in \{\Delta + 1, \Delta + 2\}$, but conjectured that for an arbitrary tree determining which of these values obtains would prove to be NP-hard.

We describe a deterministic algorithm for computing $\lambda(T)$ in the case $\Delta = 3$ and indicate how this algorithm can be generalized to arbitrary maximal degree Δ. The algorithm has exponential time complexity, and its construction shows why no more efficient deterministic algorithm can be found. (Received July 21, 2009)