1068-05-236 **Rod Downey**, **Noam Greenberg**, **Carl G Jockusch** and **Kevin G Milans*** (milans@math.sc.edu). *Binary subtrees with few path labels.*

A rooted tree is *k-ary* if all non-leaves have k children; it is *complete* if all leaves have the same distance from the root. Let T be the complete ternary tree of depth n. If each edge in T is labeled 0 or 1, then the labels along the edges of a path from the root to a leaf form a *path label* in $\{0,1\}^n$. Let $f(n)$ be the maximum, over all $\{0,1\}$-edge-labeled complete ternary trees T of depth n, of the minimum number of distinct path labels on a complete binary subtree of depth n in T.

The problem of bounding $f(n)$ arose in studying a problem in computability theory, where it was hoped that $f(n)/2^n$ tends to 0 as n grows. This is true; we show that $f(n)/2^n$ is $O\left(2^{-c\sqrt{n}}\right)$ for a positive constant c. From below, we show that $f(n) \geq (1.548)^n$ for sufficiently large n. (Received January 19, 2011)