

Meeting: 1003, Atlanta, Georgia, MAA CP X1, MAA General Contributed Paper Session, I

1003-X1-421 **R Laskar*** (rclsk@clemson.edu), Clemson University, Department of Mathematical Sciences, Clemson, SC 29634, and **P Fishburn, F Roberts** and **J Villalpando**. *Parameters of $L(2,1)$ -colorings.*

An $L(2,1)$ -coloring of a graph G is a non-negative labeling f of $V(G)$ such that adjacent vertices differ in color by two and vertices at distance two differ in color. The span $\lambda(G)$ on a graph G is the smallest k such that there exists an $L(2,1)$ -coloring using only the colors $\{0, 1, \dots, k\}$ to color the vertices of G . We consider no-hole colorings, introduce irreducible $L(2,1)$ -colorings, and define the lower irreducible no-hole span $\lambda_f(G)$ and the upper irreducible no-hole span $\Lambda_f(G)$ of a graph G . We determine the lower and upper irreducible no-hole span for paths and cycles. We offer a construction proof for the existence of an irreducible no-hole coloring on all trees that are not stars. (Received September 14, 2004)