1023-05-709 **Lavanya Kannan*** (kannan@math.tamu.edu), Department of Mathematics, Texas A&M university, College Station, TX 77843, **Hong-Jian Lai**, Department of Mathematics, West Virginia University, Morgantown, WV 26506, and **Hongyuan Lai**, Arts and Sciences, School craft College, Livonia, MI 48152. *Obtaining a uniformly dense graph from a non-uniformly dense graph.*

Let G be a non-trivial, loop-less multi-graph and for each non-trivial sub-graph H of G, let $g(H) = \frac{|E(H)|}{|V(H)|-\omega(G)}$. G is said to be uniformly dense if and only if $\gamma(G)$, the maximum among $g(H)$ taken over all non-trivial subgraphs H of G is attained when $H = G$. This quantity $\gamma(G)$ is called the *fractional arboricity* of the graph G. $\gamma(G)$ appears in a paper by Picard and Queyranne and has been studied extensively by Catlin, Grossman, Hobbs and Lai. $\gamma(G) - g(G)$ measures how much the given graph G is away from being uniformly dense. In this paper, we describe a systematic method of modifying a given graph to obtain a uniformly dense graph on the same number of vertices and edges. We obtain this by a sequence of steps; each step re-defining one end-vertex of an edge in the given graph. After each step, either the value γ of the new graph formed is lesser than that of the graph from the previous step or the size of the maximal γ-achieving subgraph of the new graph is smaller than that of the graph in the previous step. We will see that at most $O(|V(G)|^3)$ steps are required to obtain a uniformly dense graph. (Received September 21, 2006)