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Jiaao Li* (joli@mix.wvu.edu), Department of Mathematics, West Virginia University, Morgantown, WV 26506-6310, and **You Lu** and **Rong Luo**. *Adjacent vertex distinguishing total coloring of graphs with small maximum degree.*

An adjacent vertex distinguishing (for short, AVD) total k -coloring ϕ of a graph G is a total k -coloring of G such that no pair of adjacent vertices meets the same set of colors, where the set of colors at an vertex v is $\{\phi(v)\} \cup \{\phi(e) : e \text{ is incident to } v\}$. Zhang et al. conjectured in 2005 that every graph with maximum degree Δ has an AVD total $(\Delta + 3)$ -coloring. In this paper, by applying the Combinatorial Nullstellensatz, we verify the conjecture for all graphs with $\Delta \leq 4$. This is a joint work with You Lu and Rong Luo. (Received September 22, 2015)