1092-05-386 **Jaehoon Kim*** (kim805@illinois.edu), 1409 W. Green Street, Urbana, IL 61801, and **Alexandr V Kostochka** and **Xuding Zhu**. *(0,1)-improper coloring of sparse graph.*

A graph G is a $(0,1)$-colorable if $V(G)$ can be partitioned into two sets V_0 and V_1 so that $G[V_0]$ is an independent set and $G[V_1]$ has maximum degree at most 1. The problem of verifying whether a graph is $(0,1)$-colorable is NP-complete even in the class of planar graphs of girth 9.

Maximum average degree, $Mad(G) = \max_{H\subset G}\{\frac{2|E(H)|}{|V(H)|}\}$, is a graph parameter measuring how sparse the graph G is. Borodin and Kostochka showed that every graph G with $Mad(G) \leq \frac{12}{5}$ is $(0,1)$-colorable, thus every planar graph with girth at least 12 also is $(0,1)$-colorable.

The aim of this talk is to prove that every triangle-free graph G with $Mad(G) \leq \frac{22}{9}$ is $(0,1)$-colorable. We prove the slightly stronger statement that every triangle-free graph G with $|E(H)| < \frac{11|V(H)|+5}{9}$ for every subgraph H is $(0,1)$-colorable and show that there are infinitely many not $(0,1)$-colorable graphs G with $|E(G)| = \frac{11|V(G)|+5}{9}$. (Received August 14, 2013)