1026-05-117 **Bill Cuckler*** (cuckler@math.udel.edu), University of Delaware University of Delaware, Department of Mathematical Sciences, Ewing Hall, Newark, DE 19716, and **Felix Lazebnik**.
Irregularity Strength of Dense Graphs. Preliminary report.

Let G be a simple graph of order n. For a positive integer w, an assignment f on G is a function $f : E(G) \to \{1, 2, \dots, w\}$. For a vertex v, $f(v)$ is defined as the sum $f(e)$ over all edges e of G incident with v. f is called irregular if all $f(v)$ are distinct. The smallest w for which there exists an irregular assignment on G is called the irregularity strength of G, and it is denoted by $s(G)$. We show that if n is sufficiently large, and the minimum degree $\delta(G) \geq 100n^{3/4}\log^{1/4} n$, then $s(G) \leq 48\frac{n}{\delta} + 6$. For these δ, this improves the magnitude of the previous best upper bound of A. Frieze, R.J. Gould, M. Karoński, and F. Pfender by a $\log n$ factor. It also provides an affirmative answer to a question of J. Lehel, whether for every $\alpha \in (0, 1)$, there exists a constant $c = c(\alpha)$ such that $s(G) \leq c$ for every graph G of order n with minimum degree $\delta(G) \geq (1 - \alpha)n$. Specializing the argument for d-regular graphs with $d \geq 100n^{2/3}\log^{1/3} n$, we prove that, for sufficiently large n, $s(G) \leq 48\frac{n}{d} + 6$. (Received February 21, 2007)