1009-05-93 **Janos Pach** and **Rados Radoicic*** (rados@math.rutgers.edu), Department of Mathematics, Rutgers University, Piscataway, NJ 08854, and **Jan Vondrak**. *On the diameter of separated point sets with many nearly equal distances.*

A point set is *separated* if the minimum distance between its elements is one. We call two real numbers *nearly equal* if they differ by at most one. We prove that for any dimension $d \geq 2$ and any $\gamma > 0$, if P is a separated set of n points in $\mathbb{R}^d$ such that at least γn^2 pairs in $\binom{P}{2}$ determine nearly equal distances, then the diameter of P is at least $C(d,\gamma)n^{2/(d-1)}$ for some constant $C(d,\gamma) > 0$. In the case of $d = 3$, this result confirms a conjecture of Erdős. The order of magnitude of the above bound cannot be improved for any d. Our proof includes regularity lemma and Ramsey-type arguments. (Received August 08, 2005)