1129-46-88 **Kasper Green Larsen** and **Jelani Nelson*** (minilek@seas.harvard.edu), Maxwell Dworkin 125, 33 Oxford Street, Cambridge, MA 02138. *Optimality of the Johnson-Lindenstrauss lemma.*

We consider the question: given integers $n, d > 1$, and some $0 < \varepsilon < 1$, what is the minimum value of m such that for all n-point subsets $X \subset \ell_2^d$, there exists an embedding $f : X \to \ell_2^m$ with distortion at most $1 + \varepsilon$? We show that for nearly the full range of interest for the parameters n, d, and ε, the Johnson-Lindenstrauss lemma is tight: there exists an n-point subset of d-dimensional Euclidean space such that any such f must have $m \gtrsim \varepsilon^{-2} \log n$. (Received March 05, 2017)