1038-05-299 Paul H. Koester\* (phkoeste@indiana.edu), Indiana University, Rawles Hall, 831 East Third Street, Bloomington, IN 47405, and Nets Hawk Katz (nhkatz@indiana.edu), Indiana University, Rawles Hall, 831 East Third Street, Bloomington, IN 47405. On Additive Doubling and Energy.

The additive energy, E(A), and the additive doubling,  $\sigma(A)$ , are two measures of the additive structure of a finite set. An elementary estimate shows  $E(A) \ge \frac{1}{\sigma(A)}$  and in general the energy may be significantly larger than  $\frac{1}{\sigma(A)}$ . We show that one can always find a set A', closely related to A, so that  $E(A') \ge \frac{1}{\sigma(A)^{1-\epsilon}}$  for a universal  $\epsilon > 0$ . (Received February 12, 2008)