1077-05-2386 **Filip Morić** and **David Pritchard*** (daveagp@gmail.com). *Counting Large Distances in Convex Polygons: A Computational Approach.*

In a convex n-gon, let $d_1 > d_2 > \cdots$ denote the set of all distances between pairs of vertices, and let m_i be the number of pairs of vertices at distance d_i from one another. Erdős, Lovász, and Vesztergombi conjectured that $m_1+m_2+\cdots m_k \leq k\cdot n$. Using a new computational approach, we prove their conjecture when $k \leq 4$ and n is large; we also make some progress for arbitrary k by proving an upper bound of $(2k-1)\cdot n$. Our main approach revolves around a few known facts about distances, together with a computer program that searches all small configurations of distances generated by two disjoint intervals. We thereby obtain other new bounds such as $m_3 \leq 3n/2$ for large n. (Received September 22, 2011)