

Speaker: Ralph Howard (USC)

Title: Lower bounds for averaged chord lengths of a closed curve.

Abstract: Let $c: \mathbf{R}/L\mathbf{Z} \rightarrow \mathbf{R}^2$ be a convex curve (the boundary of a convex set) with a unit speed parametrization (that is $\|c'(t)\| = 1$ for all t) and length L . If A is the area enclosed by c , then

$$4A \leq \int_0^L \|c(t) - c(t + L/2)\| dt$$

with equality if and only if c is a circle. The proof involves little more than elementary vector calculus. Some other lower bounds for the averaged chord length $\int_0^L \|c(t) - c(t + L/2)\| dt$ will be given including some for curves in space. This is joint work with Mohammad Ghomi.