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**Chad A.S. Mullikin\*** ([chadm@math.uga.edu](mailto:chadm@math.uga.edu)), UGA Math Department, Boyd Graduate Studies, Athens, GA 30602. *New Results on Gromov's Distortion.*

Gromov's distortion for a knot  $\gamma : [0, 1] \rightarrow \mathbb{R}^3$  parametrized by arclength is given by

$$\delta(\gamma) = \max_{s,t \in [0,1]} \frac{\min\{|s-t|, 1-|s-t|\}}{\|\gamma(s) - \gamma(t)\|}.$$

Gromov's original question was whether or not there exists a constant  $M$  so that there is a representative of each knot class with distortion smaller than  $M$ . Understanding the geometry of distortion minimizing curves in a given knot type should be crucial in answering this question. But very little is known about these distortion minimizers.

We discuss new results for knots which have bounded distortion and fixed scale. Specifically, knots of minimum length satisfying these conditions have the property that any interval of nonzero total curvature contains one point of a pair  $(s_0, t_0)$  with  $\min\{|s_0 - t_0|, 1 - |s_0 - t_0|\} / \|\gamma(s_0) - \gamma(t_0)\| = \delta(\gamma)$ . Intuitively, this means that pairs realizing the maximum distortion are very common on some distortion minimizing knots. This new insight may be helpful in answering Gromov's question. (Received August 01, 2005)