

Knot distortion

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There are two notions of distance on an embedded knot: the 3-dimensional straight-line distance, and the length along the knot. The distortion of a knot is defined to be the minimum over all embeddings, of the maximum over all pairs of points, of the ratio between these two distances. Gromov defined knot distortion in 1983 and asked whether there were knot families with unbounded distortion. John Pardon showed in 2010 that yes, the p,q torus knot has distortion at least proportional to $\min(p, q)$. It is an open question whether the $2,q$ torus knots have unbounded distortion.