1161-57-115 **Thomas D. Eddy** and **Clayton Shonkwiler***, Department of Mathematics, Colorado State University, clay@shonkwiler.org. *New Stick Number Bounds from Random Sampling of Confined Polygons.*

The stick number of a knot is the minimum number of segments needed to build a polygonal version of the knot. Despite its elementary definition and relevance to physical knots, the stick number is poorly understood: for most knots we only know bounds on the stick number. We adopt a Monte Carlo approach to finding better bounds, producing very large ensembles of random polygons in tight confinement to look for new examples of knots constructed from few segments. We generated a total of 220 billion random polygons, yielding either the exact stick number or an improved upper bound for more than 40% of the knots with 10 or fewer crossings for which the stick number was not previously known, as well as determining for the first time the exact stick number of a non-torus prime knot with more than 9 crossings. (Received August 13, 2020)