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*On BFACF and stick numbers*

The BFACF algorithm has been the standard approach to sampling self-avoiding polygons of fixed topology for over 40 years. In this talk we describe adapting BFACF to random polygons in  $\mathbb{R}^3$ .

One immediate application of this method is to improve bounds on stick-numbers - both for equilateral polygons and non-equilateral polygons. In particular, we find upper bounds for both the stick and equilateral-stick numbers for all knots of 13 or fewer crossings. In some cases these upper bounds on stick-numbers actually give exact stick-number.

In many cases there remains a gap between the equilateral-stick and stick number bounds. By adapting the move set of BFACF we can try to "equilateralise" polygons. This is sometimes sufficient to infer the existence of an equilateral conformation without actually producing it. We also apply the recent CoBarS method of Cantarella and Schumacher to produce equilateral conformations.

This is work together with Jason Cantarella and Clayton Shonkweiler, building on some earlier work with Nick Beaton and Nathan Clisby. Of course, any errors are entirely my own.