1041-60-283 **Robert G Scharein*** (rob@knotplot.com), Thornton Hall 937, 1600 Holloway Ave, San Francisco, CA 94132, and **Mariel Vazquez**, **F Javier Arsuaga** and **Zoe Talbot**. *Random knotting using the BFACF algorithm in constrained geometries.* Preliminary report.

The BFACF algorithm is a commonly used method to sample the space of configurations of a specific knot type on the simple cubic lattice. Generally this has been done without any constraints on the path of the knot. We introduce an experimental platform where a wide range of constrained geometries in which to run the BFACF algorithm can be quickly and easily set up. These range from simple boxes, slabs and tubes to cavities of arbitrary shape, possibly even knotted. In addition, the containers may contain any number of obstacles. Using this platform, we have obtained and will present minimal stick candidates on the cubic lattice for all knots in the Rolfsen catalog for the unconstrained case, for slabs (constrained in one dimension) and for tubes (constrained in two dimensions). Using other kinds of cavities, possible applications to DNA packing will be discussed. This work is aided by an efficient constant time (in the number of edges) algorithm for the BFACF. (Received August 12, 2008)