1157-57-124   **Eric Samperton*** (`smprtn@illinois.edu`). *Towards hyperbolic quantum computing and such.* Preliminary report.

As Freedman, Kitaev, Larsen, and Wang famously showed, there exist 3-dimensional unitary topological quantum field theories where the ability to make certain kinds of approximations of the resulting 3-manifold invariants is equivalent to the usual BQP circuit model. Their result theoretically justifies the idea of topological quantum computing. Can we "geometrize" their result by implementing a kind of "hyperbolic quantum computing? More precisely, can we efficiently encode quantum circuits not just with arbitrary 3-manifolds, but with *hyperbolic* 3-manifolds? I'll report on progress I've made on this question. (Received January 22, 2020)