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Jared S Weinstein* (jsweinst@bu.edu), Jared Weinstein, Dept. of Mathematics and Statistics, Boston University, Boston, MA 02115. *A variety with many points over a finite field.*

This is joint work with Mitya Boyarchenko. We construct a special hypersurface X over a finite field, which has the property of "maximality", meaning that it has the maximum number of rational points relative to its topology. Our variety is derived from a certain unipotent algebraic group, in an analogous manner as Deligne-Lusztig varieties are derived from reductive algebraic groups. As a consequence, the cohomology of X can be shown to realize a piece of the local Langlands correspondence for certain wild Weil parameters of low conductor. (Received September 21, 2011)