1167-13-78 **Kyle Logan Maddox*** (`maddox@ku.edu`) and **Lance Edward Miller**. *Generalized F-depth and graded nilpotent singularities.*

We study generalized F-depth and F-depth, depth-like invariants associated to the canonical Frobenius action on the local cohomology modules of a local ring of prime characteristic. These invariants are naturally associated to the singularity types generalized weakly F-nilpotent and weakly F-nilpotent, which have uniform behavior among the Frobenius closure of all parameter ideals simultaneously. By developing natural lower bounds on these invariants, we are able to provide sufficient conditions which produce broad classes of rings that have these singularity types, including constructions like gluing schemes along a common subscheme, Segre products of graded rings, and Veronese subrings of graded rings. We further analyze upper bounds on Frobenius test exponents of these constructions in terms of the input data. (Received February 16, 2021)