

A longstanding project in algebraic geometry has been to quantify the complexity (read: badness) of hypersurfaces (and more general varieties). For hypersurfaces defined over the complex numbers, this quantification can be partially accomplished through the use of analytic techniques. In particular, an integrability condition leads to a “measure of singularity” called the complex singularity exponent or the log-canonical threshold (LCT). Although such analytic methods are not available for hypersurfaces defined over fields of positive characteristic, by trying to mimic the definition of the LCT in the most naive way in this setting we obtain an effective measure of singularity, called the F-pure threshold (FPT). In this talk I shall introduce these two measures of singularity and discuss the beautiful, surprising connections between them. I shall also present some recent progress in the study of FPTs, obtained in a collaboration with Daniel J. Hernández (University of Kansas).