Abstract

The $F$-signature of a local ring in positive characteristic gives a measure of singularities by analyzing the asymptotic behavior of the number of splittings ($F$-splittings) of large iterates of the Frobenius endomorphism. One can also incorporate ideal pairs by restricting the set of "allowable" splittings, and varying the coefficient of the ideal gives rise to the $F$-signature function of the pair. While for each fixed characteristic $p > 0$, these functions tend to be extremely complicated, in the few examples that have been computed they tend to limit to a piecewise polynomial function as $p$ tends to infinity. In this talk, I will discuss what is known about these functions and their limits, and present a number of new computations for diagonal hypersurfaces. The new computations (joint with Shideler) build on the techniques of Han and Monsky used to compute the Hilbert-Kunz multiplicities of diagonal hypersurfaces.