1135-13-2491 **George Whelan***, gwhelan@gmu.edu. *Generalized Depth and Associated Primes in the Perfect Closure R^∞.* Preliminary report.

Let $(R, \mathfrak{m})$ be a reduced Noetherian local ring of characteristic $p > 0$. If we consider a finitely generated R-module M, we can study the notions of depth and associated primes of both M and its Frobenius iterates $F^e(M)$. We can then extend R to its perfect closure $(R^\infty, \mathfrak{m}^\infty)$, which will in general no longer be Noetherian. These notions then become more subtle when we extend scalars to the R^∞-module $R^\infty \otimes_R M$.

In this talk, we will define these more subtle measures of $R^\infty \otimes_R M$ over R^∞, and establish some relationships with depth and associated primes of the iterates $F^e(M)$ over R. Specifically if R is an F-pure ring, then the depth of $F^e(M)$ will stabilize for $e \gg 0$, and we call this corresponding value the stabilizing depth of M over R. As we will show, this measure of M will coincide with some of these non-Noetherian depth measures of $R^\infty \otimes_R M$ over R^∞. (Received September 26, 2017)