WVU ALGEBRA SEMINAR via ZOOM

FROBENIUS BETTI NUMBERS AND SYZYGIES OF FINITE LENGTH MODULES

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Introductory talk: Saturday, October 31, 2020
9:00 am - 10:00 am (Eastern Time USA)

Research talk: Saturday, November 7, 2020
9:00 am - 10:00 am (Eastern Time USA)

Abstract: Let $(R, \mathfrak{m})$ be a Noetherian local ring of dimension $d > 0$ and M be a finitely generated R-module of finite length. Suppose char $R = p > 0$ and $d = 1$. De Stefani, Huneke and Núñez-Betancourt explored the question: what vanishing conditions on the Frobenius Betti numbers force projective dimension of M to be finite. For arbitrary characteristic they also proved that the syzygy $\Omega_3(M)$ of M has infinite length whenever $\mathrm{pd}_R M = \infty$ and $d = 1$.

In the first talk we will discuss the first question when $d \geq 1$.

In the second talk we will prove that $\Omega_3(M)$ has infinite length whenever $\mathrm{pd}_R M = \infty$ and $d = 2$.

This is joint work with Ian Aberbach.