

Local Rings and Golod Homomorphisms

Thomas Schnibben

Abstract

The Poincaré series of a local ring is the generating function of the Betti numbers for the residue field. The question of when this series represents a rational function is a classical problem in commutative algebra. Golod rings were introduced by Golod in 1962 and are one example of a class of rings that have rational Poincaré series. The idea was generalized to Golod homomorphisms by Levin in 1975.

In this paper we prove two homomorphisms are Golod. The first is a class of ideals such that the natural projection to the quotient ring is a Golod homomorphism. The second deals with Golod homomorphisms between certain fiber products. To prove the second we give a construction for a resolution of a module over a fiber product.