1165-13-65 **Van C. Nguyen*** (vnguyen@usna.edu), Department of Mathematics, United States Naval Academy, Annapolis, MD 21402, and **Oana Veliche**. *Minimal free resolutions and Golodness of a local ring.*

In a paper in 1962, Golod proved that the Betti sequence of the residue field of a local ring R attains an upper bound given by Serre if and only if the homology algebra A of the Koszul complex of R has trivial multiplications and trivial Massey operations. This is the origin of the notion of Golod ring. Using the Koszul complex components, he also constructed a minimal free resolution of the residue field over such rings.

In this talk, we extend this construction up to degree five for *any* local ring. We describe how the multiplicative structure and the triple Massey products of the homology algebra A are involved in the construction. As a result, we provide explicit formulas for the first six terms of a sequence that measures how far the ring R is from being Golod, and discuss other consequences of this construction. This is joint work with Oana Veliche. (Received January 04, 2021)