

ALGEBRA SEMINAR

Department of Mathematics
University of Texas at Arlington
presents

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"On the Hilbert series of certain local rings
admitting non-trivial totally reflexive modules"

Friday, February 19, 2010
4:30 p.m., 308 Pickard Hall
Refreshments served at 4:15pm

Abstract:

A finitely generated module M over a ring R is called totally reflexive if and only if the following conditions hold:

1. $\text{Ext}_R^i(M, R) = 0$ for all $i > 0$
2. $\text{Ext}_R^i(M^*, R) = 0$ for all $i > 0$
3. $M \cong M^{**}$ via the canonical biduality map

Such modules are a natural generalization of projective modules, and they form the building blocks of Gorenstein dimension. Furthermore, their non-trivial existence is essential to the computation of Tate (co)homology.

In this talk, we will discuss necessary conditions for certain rings to admit non-trivial totally reflexive modules. In particular, we will characterize the Hilbert series of a local ring (R, \mathfrak{m}) , with $\mathfrak{m}^n = 0$, which admits a totally reflexive module with linear complete resolution. We will consider several examples of such rings, and will finish with some open questions

Web-Page for Seminars (Department of Mathematics, UTA)
<http://www.uta.edu/math/pages/main/seminar.htm#algebra>

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