

Algebraic Geometry Seminar

On Ulrich modules and sheaves

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Abstract: An "Ulrich module" for a local ring is a non-zero maximal Cohen-Macaulay module of minimal multiplicity. An "Ulrich sheaf" for a projective scheme is a non-zero coherent sheaf whose cohomology table looks like the cohomology table of a direct sum of copies of the structure sheaf on projective space. The mere existence of an Ulrich module or an Ulrich sheaf implies a collection of desirable results. For instance, if a local ring R admits an Ulrich module, then Lech's conjecture holds for faithfully flat extensions of R . It has been asked if every Cohen-Macaulay ring admits an Ulrich module. In this talk, I'll explain the connection between Ulrich modules and Ulrich sheaves, and use it to prove there exist complete local complete intersection rings of dimension two that do not have any Ulrich modules. This result is joint work with Srikanth Iyengar, Linqun Ma, and Ziquan Zhuang.

Monday, October 28 at 3:00 PM in 636 SEO