

## Algebraic Geometry Seminar

### *Koszul Modules and Green's Conjecture*

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**Abstract:** Formulated in 1984, Green's Conjecture predicts that one can recognize the intrinsic complexity of a smooth algebraic curve from the syzygies of its canonical embedding. In characteristic zero, Green's Conjecture for a general curve has been resolved using geometric methods in two landmark papers by Voisin in the early 00s. More direct approaches have been proposed over the years to solve Green's Conjecture for general curves, and one dates back at least to a paper of Eisenbud in the early 90s, and involves a connection with the syzygies of the tangent developable  $T$  to a rational normal curve. I will explain how the theory of Koszul modules allows for a complete characterization, in arbitrary characteristics, of the (non-)vanishing behavior of the syzygies of  $T$ , proving Green's conjecture for general curves in almost all characteristics. Joint work with M. Aprodu, G. Farkas, S. Papadima, and J. Weyman.

Wednesday, November 7 at 4:00 PM in 427 SEO