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Title: Cohomological Criteria for Vector Bundles on Multiprojective Space

Abstract:

This talk is concerned with cohomological property of vector bundles towards Horrocks-type criteria on multiprojective space. The Horrocks theorem says that a vector bundle  $E$  on  $\mathbb{P}^n$  is a direct sum of line

bundles if and only if  $H^i(E(t))=0$  for all  $1 \leq i \leq n-1$  and  $t$ , in other words, any maximal Cohen-Macaulay module over a regular local ring is free. A Buchsbaum vector bundle on  $\mathbb{P}^n$  is also known to be isomorphic to a direct sum of line bundles and sheaves  $\Omega_{\mathbb{P}^n}^p(\ell)$  of differential forms with some twist by Chang and Goto. We will study the corresponding behaviour of vector bundles on multiprojective space by using the syzygy technique including the Castelnuovo-Mumford regularity.