1016-13-289 Jooyoun Hong* (hong@math.purdue.edu), Dept. Math. Purdue Univ. 150 N. Univ. St., West Lafayette, IN 47907, and Bernd Ulrich (ulrich@math.purdue.edu), Department of Mathematics, Purdue University, 150 N. University Street, West Lafayette, IN 47907. Integral Closures of Modules and Hyperplane Sections. Preliminary report.

The theory of the normalization of ideals has been extended to modules and, as in the case of ideals, the Rees algebras of modules serve as a useful tool to detect normality of modules. Let R be a Noetherian ring and E a finitely generated torsionfree R-module having a rank. To enable the extension, we consider two technical devices to attach an ideal I of a ring S to the R-module E so that the comparison can be made between the Rees algebra of E and the Rees algebra of I. One of the ideals that can be used is the ideal generated by the module in the polynomial ring which contains the Rees algebra of the module. The other is known as the generic Bourbaki ideal of E. In this joint work with B. Ulrich, we show that integrally closedness of any ideals of height at least 2 is compatible with a specialization of generic elements using a vanishing theorem of local cohomology of certain degrees. By turning a module into an ideal, we relate the integral closure of a module to that of the ideal. (Received February 14, 2006)