

1038-14-79

Lawrence Man Hou Ein* (ein@uic.edu), Department of Mathematics, University of Illinois at Chicago, Chicago, IL 60607-7045, and **Mihnea Popa**, Department of Mathematics, University of Illinois at Chicago, Chicago, IL 60607-7045. *Extension Theorems*. Preliminary report.

We'll discuss joint work with Popa on extension theorems. We'll describe how extension theorems have been applied by Siu, Hacon, McKernan and Takayama in studying properties of pluricanonical linear systems. The following is a version of the extension theorem that we proved.

Theorem: Let X be a smooth projective variety, and $S \subset X$ a smooth divisor. Let Δ be an effective \mathbf{Q} -divisor on X such that $[\Delta] = 0$ and $S \not\subset \text{Supp}(\Delta)$. Let A be an ample \mathbf{Q} -divisor and k a positive integer such that $M \sim k(K_X + S + A + \Delta)$ is Cartier. Assume the following:

- $S + \text{Supp}([k\Delta])$ is a simple normal crossings divisor.
- the pair $(S, \{k\Delta\}_S)$ is klt.
- the pair (S, Δ_S) is klt.
- the stable base locus $\mathbb{B}(M_S)$ does not contain any intersection of components of $\text{Supp}([k\Delta])_S$.

Then the restriction maps

$$H^0(X, \mathcal{O}_X(mM)) \longrightarrow H^0(S, \mathcal{O}_S(mM_S))$$

are surjective for all $m \geq 1$. (Received January 29, 2008)