1119-32-115 **Yih Sung***, 150 N. University Street, West Lafayette, IN 47906. *L^2 technique and its applications.*

In this talk, I will talk about two applications of the L^2 method. The main idea of the L^2 method is to solving $\bar{\partial}$-equations. First, I will talk about the division theorems. Suppose $f, g_1, \cdots, g_p$ are holomorphic functions over a pseudoconvex domain $\Omega \subset \mathbb{C}^n$. Then there raises a natural question: when can we find holomorphic functions $h_1, \cdots, h_p$ such that $f = \sum g_j h_j$? The celebrated Skoda theorem solves this question and provides an L^2 sufficient condition. In general, one can consider the vector bundle case, i.e. to determine the sufficient condition of solving $f_i(x) = \sum g_{ij}(x) h_j(x)$ with parameter $x \in \Omega$. Since the problem is related to solving linear equations, the answer naturally connects to the Cramer's rule. The two ingredients of the proof are projectivization technique and the generalized fundamental inequality. The second application is about compact local Hermitian symmetric space of non-compact type. I will consider a tower of compact local Hermitian symmetric spaces $X_{s+1} \longrightarrow X_s \longrightarrow \cdots \longrightarrow X_0 = X$, and study K_s's (N_p) properties when s is sufficient big. The main ingredient of the argument is vanishing theorem. (Received February 11, 2016)