MULTIPLIER IDEAL SHEAVES, CURVATURE POSITIVITY, AND L^2 ESTIMATES FOR $\overline{\partial}$-EQUATION

Xiangyu Zhou

(Chinese Academy of Science)

Abstract: In this talk, we'll first recall basic and recent results on multiplier ideal sheaves associated to pseudoeffective line bundles, including Guan-Zhou's solution of Demailly's strong openness conjecture, and then introduce some new results on multiplier submodule sheaves which are the vector bundle version of multiplier ideal sheaves. We'll also present our result on characterizing Nakano positivity via solving $\overline{\partial}$-equations with optimal L^2 estimates (established by Deng-Ning-Wang-Zhou), which is a converse proposition of Hörmander-Demailly's L^2 existence theorems. As an application of the criterion, we give an affirmative answer to Lempert's problem (solved by Liu-Yang-Zhou), which asks whether the limit metric of an increasing sequence of hermitian metrics with Nakano semi-positive curvature on holomorphic vector bundles is still Nakano semi-positive.