İSTANBUL ANALYSIS SEMINARS

THE STRIP PROBLEM FOR L^p FUNCTIONS

Mark G. LAWRENCE

Nazarbayev University, Kazakhstan
Department of Mathematics

Abstract: A natural problem in complex analysis is to determine a minimal set of moments for a function to be holomorphic on a domain in $\mathbb{C}$; alternatively, one looks for moments on a boundary of a domain in $\mathbb{C}^n$ which guarantee that a function has a holomorphic extension to the interior of the domain. The 1-*dimensional extension property* on families of curves has featured prominently in many recent papers of this type. Proofs by the 1-dimensional extension property assume that one has a family of analytic discs D_α with $\partial D_\alpha \subseteq M \subseteq \mathbb{C}^n$ and a function f on M (usually continuous or smooth), such that for each α, $f|_{\partial D_\alpha}$ extends holomorphically to D_α. Then, one wants to assert that f is holomorphic, or in the case of boundaries of domains in several variables, that f has a holomorphic extension to the whole domain.

A special case of this theorem is for a horizontal strip in the plane, with the family of curves C_t which are horizontal translates of a fixed curve, such that the translates of the curve fill up the strip. Case of this were proved previously by A. Tumanov and M. Agranovsky. This talk will discuss a proof of the strip theorem for a function $f(z)$ which is in a weighted L^p space on the strip, valid for a large class of curves. The methods involve extension from wedges in an auxiliary set in $\mathbb{C}^2$. The wedge extension techniques are quite specialized and may be new. Related theorems in several variables will be discussed.

***Date*:** March 22, 2013
***Time*:** 17:00
***Place*:** Sabancı University, Karaköy Communication Center
Bankalar Caddesi 2, Karaköy 34420, İstanbul