國立中山大學應用數學系
學術演講

講　者：張德健 (Der-Chen Chang) 教授

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講　題：The Cauchy-Szego projection on a family of model domains $\Omega_{\vec{k}}$ in $\mathbf{C}^{n+1}$

時　間：2024/07/17（Wednesday）11:10 ~ 12:00

地　點：理學院四樓, 理 SC 4009-0 室

茶　會：10:45 於理 SC 4010 室 (系辦公室)

Abstract

In this talk, we give a brief introduction of some progress of analysis, especially on Szego projection on a family of model domains $\Omega_{\vec{k}}$ in $\mathbf{C}^{n+1}$. Here

$$\Omega_{\vec{k}}=\Big\{(z_1,\ldots,z_n,z_{n+1})\in\mathbf{C}^{n+1}:\mathrm{Im}(z_{n+1})>\sum_{k=1}^{n}\frac{1}{2k_j}|z_k|^{2k_j},\ k_j\in\mathbf{N}\Big\},$$

and $k=(k_1,\ldots,k_n)$ with $k_j\in\mathbf{N}$. These are decouple domains of finite type. The goal of this talk is to discuss the L^p, $1<p\le\infty$ properties of the Cauchy-Szeg\"o projection defined on $\partial\Omega_{\vec{k}}$. We first give a quick review for the case $n=0$ and then move to cases $n\ge 1$. We begin with the case when $k_j=1$ for all k_j (which is the unbounded realization of the unit ball in $\mathbf{C}^{n+1}$). Then we move to cases for $k_j>1$. In general, $\Omega_{\vec{k}}$ is not a group (except $k_j=1$ for all j). We try to explain an optimal ``lifting" argument to lift $\partial\Omega_{\vec{k}}$ to a high dimensional hypersurface so that it can be identified as a nilpotent Lie group structure. Once we achieve this goal, we may give precise characterization of atomic Hardy spaces for $0<p\le 1$ and obtain H^p estimates.

敬 請 公 告！　歡 迎 參 加！

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