國立中山大學應用數學系

Dept. of Applied Math., National Sun Yat-sen University

Talk

Speaker：陳宏賓博士 Dr. Hong-Bin Chen

中央研究院數學研究所

Title：General Upper Bounds on the Largest Size of Families of Sets with a Forbidden Poset

Time：2014/02/21（Friday,星期五）15：30 ~ 16：20

Place：理學院 4 樓理 4009-1 室（教室設備：白板、固定單槍、固定電腦）

(Room 4009-1, Dept. of Applied Math, NSYSU)

Tea Time：15:00~15:30 於理 4010 室 (系辦公室)

Abstract

The problem of determining the largest size of P-free families of subsets of $[n]$, denoted by $La(n,P)$, can be traced back to Sperner's Theorem in 1928. He proved that the largest size of antichain families is the largest binomial coefficients of n. Let $\Sum(n,k)$ be the sum of the k middle binomial coefficients of n. Sperner's Theorem assures that $La(n,P_2) = \Sum(n,1)$ where P_k denotes a chain of size k. Erdos in 1945 further extended it to $La(n,P_k) = \Sum(n,k-1)$.

Erdos' result implies a general upper bound that

$$\mathrm{La}(n,P) \leq \Sigma(n,|P|-1) \text{ for any finite poset } P$$

as P must be a subposet of a chain of length |P|. Over the past 65 years, however, little was known about nontrivial upper bounds until Burcsi and Nagy in 2012 proved

$$\mathrm{La}(n,P) \leq \left[\frac{1}{2}(|P|+h(P))-1\right]\binom{n}{\lfloor \frac{n}{2} \rfloor}$$

where $h(P)$ denotes the height of P, i.e., the largest size of chains in P.

In this talk, I will introduce some new results along this direction. The talk is based on joint works with Wei-Tian Li, Fei-Huang Chang and Jun-Yi Guo.

中山大學應用數學系

敬 請 公 告！ 歡 迎 參 加！

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