國家理論科學研究中心數學組
國立交通大學應用數學系
國立交通大學 CMMSC 中心
學術演講公告

主講人：黃光明 教授 (交通大學退休講座教授)

講　題：Counting various types of separable partitions for points in *d*-space

時　間：98 年 10 月 13 日(星期二) 下午 2:00 –3:20

　　　　2:00 –3:00 為學術演講

　　　　3:00 –3:20 為與學生座談

地　點：(光復校區)科學一館 223 室

Abstract

The problem is to partition a set of *n* points in *d*-space into *p* disjoint subsets (called parts) to maximize (or minimize) a given objective function. An example is the clustering problem which seeks to minimize the within-part distances. It is in general very difficult to find optimal partitions and heuristic solutions are given in most cases. Our approach is to show that there exists an optimal partition in a class of partitions (usually characterized by a geometric property) whose size is polynomial in *n*. Then we can search for an optimal partition in that class in polynomial time.

Given a partition π, let $\pi_1,\ldots,\pi_p$ denote its *p* parts and conv(π_j) the convex hull of π_j. Then π is called separable if for any *j, k* from 1 to *p*, conv(π_j) $\bigcap$ conv(π_k) $=\varnothing$. π is called almost separable if the above intersection can consist of at most one point which must be a vertex of both convex hulls. There are two other classes "cone-separable" and "sphere-separable" to be defined in the talk. We will count the numbers of partitions in all four classes and show that they are all polynomial.

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