國立陽明交通大學應用數學系
學術演講公告

主講人：黃皜文 教授(中央大學 數學系)

講　題：Johnson graphs and Clebsch–Gordan coefficients of $U(\mathfrak{sl}_2)$ along with their q-analogues

時　間：113 年 4 月 16 日(星期二) 下午 14:00 –15:00

地　點：線上演講 (meet.google.com/bfa-aykg-mjt)

Abstract

The Johnson graph $J(D,k)$ is a finite simple connected graph whose vertices are all k-element subsets of a D-element set and two distinct vertices are adjacent when their intersection contains $k-1$ elements. The universal enveloping algebra $U(\mathfrak{sl}_2)$ of the Lie algebra $\mathfrak{sl}_2$ is a unital associative algebra over $\mathbb{C}$ generated by E,F,H subject to the relations $[H,E]=2E$, $[H,F]=-2F$ and $[E,F]=H$. The Clebsch–Gordan coefficients of $U(\mathfrak{sl}_2)$ are used to describe the transition from the uncoupled basis to the coupled basis for a finite-dimensional irreducible $U(\mathfrak{sl}_2)\otimes U(\mathfrak{sl}_2)$-module.

In the first half of this talk, I will link the two seemingly irrelevant subjects: Johnson graphs and Clebsch–Gordan coefficients of $U(\mathfrak{sl}_2)$. In the second half of this talk, I will mention a q-analog connection between Grassmann graphs and the Clebsch–Gordan coefficients of $U_q(\mathfrak{sl}_2)$.

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