

# 國立中山大學應用數學系

## 學術演講

講者：鄭硯仁 博士 (國立陽明交通大學 應用數學系)

講題：Petrie symmetric functions

時間：2023/10/19 (Thursday) 14:10~15:00

地點：理 SC 4009-1 教室

茶會：13:30

### Abstract

For  $k \geq 1$ , the homogeneous symmetric functions  $r_m^{(k)}$  in  $\mathbb{C}[x_1, x_2, \dots]$  are the sum of monomials of total degree  $m$  in which the degree of every variable is less than  $k$ . These functions are called the Petrie symmetric functions, and they have been recently studied by Grinberg et al. We find the combinatorial meaning of the coefficients of the expansion of  $r_m^{(k)}$  in the basis of Schur symmetric functions  $s_\lambda$ . As a consequence, we reprove Liu-Polo conjecture, originally confirmed by Grinberg, which is related to the cohomology of a special line bundle, in a very straightforward way. We further study the signed multiplicity freeness of  $r_m^{(k)} \cdot p_n$ , where  $p_n$  is the powersum symmetric function. We give a necessary and sufficient condition when  $r_m^{(k)} \cdot p_n$  is signed multiplicity free, which solves a conjecture of Alexandersson as a special case  $n=2$ . I will also introduce some related problems.

敬請公告！歡迎參加！

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