

# 國立中山大學應用數學系

## 學術演講

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講題：Generalized numerical ranges: Interplay between algebra and geometry

時間：2018/04/12（星期四）15:30 ~ 16:30

地點：理學院四樓理 SC 4009-1 室

茶會：15:00 於理 SC 4010 室（系辦公室）

### 摘要

The (classical) numerical range of a complex square matrix is the collection of all quadratic forms on the unit vectors determined by the matrix. This concept succinctly captures lots of important algebraic properties of the matrix through its geometry. This interplay makes it as a useful tool in studying different subjects. Besides the classical concept, there are many generalizations of the numerical range motivated by theories and applications. In this talk, we discuss two of its generalizations, the C-numerical range and the  $(p,q)$ -matricial range. Recent results on the algebraic properties of matrices and geometrical properties of the generalized numerical ranges as well as their connections with quantum information science will be discussed.

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