Extension: 56483   Email: kzwang@math.nctu.edu.tw

Prof. Kuo-Zhong Wang / Department of Applied Mathematics

Operator Theory, Matrix Analysis, Numerical Ranges

The main work of our research on the numerical range is to analysis theoretically the correlation between numerical ranges, functional analysis and matrix analysis.

The numerical range and numerical radius are very useful for studying linear operators acting on Hilbert spaces or Banach spaces. For instance, it is known that the close set of the numerical range always contains its spectrum, and many geometrical properties of the numerical range correlate with its spectrum. The spectrum and the numerical range are useful tools for studying operators and matrices. In this respect we're now approaching the research about product numerical ranges and it is used in the study of quantum information science. On the other hand, we have also been interest in studying the numerical range of a special matrix such as a partial isometry matrix or a stochastic matrix.

A generalization of the numerical range has been applied widely in many fields. The classical numerical range is also generalized to valuable different types which play important rolls in many fields. For instance, the higher-rank numerical range is applied in quantum physics, the C-numerical radii is applied in unitary similarity invariant norms, the joint numerical range is applied in the joint spectrum and joint spectral norm. I'm interested in these questions, and I'm looking forward to cooperating with experts in this field.