2003年分析及其應用研討會

Seminars in Analysis and its Applications, 2003

The abstracts

Approximate homomorphisms and approximate isometries

Peter Semrl (University of Ljubljana)

A map $\phi : \mathcal{A} \to \mathcal{B}$ between two Banach algebras is an ε-approximate homomorphism if

$$\|\phi(x+y) - \phi(x) - \phi(y)\| \leq \varepsilon(\|x\| + \|y\|)$$

and

$$\|\phi(xy) - \phi(x)\phi(y)\| \leq \varepsilon \|x\| \, \|y\|$$

for every pair $x, y \in \mathcal{A}$. A map $f : X \to Y$ between two real Banach spaces is an ε-approximate isometry if

$$| \, \|f(x) - f(y)\| - \|x - y\| \, | \leq \varepsilon$$

for every pair of vectors $x, y \in X$. We will present some results on the approximation of approximate homomorphisms by homomorphisms and similar stability results for isometries.

Refined Besov spaces

林欽誠〈中央大學數學系〉

We generalize the Besov space $B^s_{p,q}, s \in \mathbb{R}$, to $RB^\alpha_{p,q}, \alpha \in \mathbb{R}^k, k \in \mathbb{N}$, called refined Besov space. We also prove that there are infinitely many refined Besov spaces between $B^s_{p,q}$ and $\bigcup_{t>s} B^t_{p,q}$.

Numerical ranges for companion matrices

吳培元 (交通大學)

As we all learned from a second course of linear algebra, with any monic polynomial there is associated a so-called companion matrix formed with coefficients of the polynomial. Such matrices play the role of the building blocks for the rational form of finite matrices. In this talk, we consider the two basic problems concerning the numerical ranges of companion matrices: (1) Which nonempty convex subset of the plane can be the numerical range of some companion matrix ? (2) To what extent is a companion matrix determined by its numerical range? We will present some partial results, obtained jointly with Hwa-Long Gau in recent months, on these problems.

Lp boundedness of some rough operators with different weights

丁 勇 〈北京師範大學數學系)

We prove that the maximal operator M_Ω, the singular integral operator T_Ω, and the maximal singular integral operator T^*_Ω with rough kernels are all bounded operators from $L^p(v)$ to $L^p(u)$ for the weight functions pair (u, v). Here the kernel function Ω satisfies a size condition only; that is, $\Omega \in L^q(S^{n-1}), q > 1$, but has no smoothness on S^{n-1}.

Charnes-Cooper Transformation for Complex Fractional Programming

賴漢卿〈中原大學應用數學系〉

Extensions of the Charnes-Cooper variable transformation to fractional programming of linear and nonlinear complex functions are studied. Using such transform, the complex fractional programming is turned to an equivalent nonfractional complex programming.

Existence Theorems of Simultaneous Equilibrium problems and Generalized Vector Quasi - Saddle Points

林來居 〈彰化師範大學數學系〉

In this paper we establish the existence theorems of simultaneous equilibrium problems. As consequences of our results, we establish the existence theorems of mathematical programs and equilibrium problems and existence theorems of generalized vector quasi-saddle point problems.

Evolution semigroups and asymptotic beharior of solutions of evolution equations.

Van Minh Nguyen 〈河內大學〉

In this talk I give an overview of a new approach via evolution semigroup to the asymptotic behavior of solutions of evolution equations of the form $u'(t) = A(t)u(t) + f(t)$, where $A(t)$ generates a strongly continuous periodic evolutionary process and f is an almost periodic function. The results surveyed are focused on the conditions so that the equations have (unique) almost periodic solutions with structure of spectrum as the one of f. The conditions are stated in terms of the spectral properties of either the operator-coefficients in the case of autonomous equations or the monodromy operators in the case of periodic equations. All these conditions can be established in the framework of evolution semigroups associated with given evolutionary processes. This method of study allows one to consider not only the nonresonant case but also the resonant one. The main techniques used involve commuting operators, spectral mapping theorem for semigroups in the non-resonant case, and specral decomposition in the resonant case.