Updates in the book of abstracts

Changed talk in *Session 3. Approximation, Special Functions and Numerical Analysis*

The GLT class as a Generalized Fourier Analysis and applications (main talk)

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Recently, the class of Generalized Locally Toeplitz (GLT) sequences has been introduced as a generalization both of classical Toeplitz sequences and of variable coefficient differential operators and, for every sequence of the class, it has been demonstrated that it is possible to give a rigorous description of the asymptotic spectrum in terms of a function (the symbol) that can be easily identified. This generalizes the notion of a symbol for differential operators (discrete and continuous) or for Toeplitz sequences for which it is identified through the Fourier coefficients and is related to the classical Fourier Analysis. The GLT class has nice algebraic properties and indeed it has been proven that it is stable under linear combinations, products, and inversion when the sequence which is inverted shows a sparsely vanishing symbol (sparsely vanishing symbol = a symbol which vanishes at most in a set of zero Lebesgue measure). Furthermore, we remark that the GLT class virtually includes any Finite Difference or Finite Element discretization of PDEs and, based on this, we demonstrate that our results on GLT sequences can be used in a PDE setting in various directions: 1) as a generalized Fourier Analysis for the study of iterative and semi-iterative methods when dealing with variable coefficients, non rectangular domains, non uniform gridding or triangulations, 2) in order to provide a tool for the stability analysis of PDE numerical schemes (e.g. a necessary von Neumann criterium for variable coefficient systems of PDEs is obtained, uniformly with respect to the boundary conditions), 3) for a multigrid analysis of convergence and for providing spectral information on large preconditioned systems in the variable coefficient case, etc. We will discuss problems 1)-3) and other possible directions in which the GLT analysis can be conveniently employed.

Talk in *Session 4. Functional Analysis and its Applications*

Fréchet differentiability of the norm in the spaces of N-homogeneous polynomials on a JB^*-triple

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We show that if X is a C^*-algebra of infinite dimensional, then the spaces of N-homogeneous polynomials on X is extrmely rough.

Talk in *Session 4. Functional Analysis and its Applications*

The orthogonality and quasi orthogonality of the best approximant sets

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The purpose of this paper is to introduce and discuss some concepts of best approximations in normed linear spaces. A concept of orthogonality on normed linear space was introduced by Brickhoff. We shall also define the quasi-orthognal sets, and obtain some results about them.