Editorial Introduction

This volume is devoted to the International Summer School and Workshop on Operator Algebras, Operator Theory and Applications, WOAT 2006, held at Instituto Superior Técnico in Lisbon, Portugal on 1–5 September 2006. WOAT 2006 was a satellite conference of the International Congress of Mathematicians 2006 that was held in Madrid, Spain.

Operator Algebras and Operator Theory are important areas of Mathematics that play an important role in different mathematics areas and its applications, particularly in Mathematical Physics and Numerical Analysis. The main aim of WOAT 2006 was to bring together researchers in the Operator Algebras and Operator Theory areas.

This volume contains three lecture notes of the Summer School courses and nineteen articles, contributions to the workshop of the WOAT 2006. The lecture notes, written by leading experts in the fields, are focused on:

- *Subalgebras of Graph C^*-Algebras* (*S. Power*)
  A self contained introduction to two novel classes of non self-adjoint operator algebras, namely the generalized analytic Toeplitz algebras associated with the Fock spaces of a directed graph and subalgebras of graph C^* algebras, are given. The topics are independent but in both cases the focus is on techniques and problems related to classifying isomorphism types and to the recovery of underlying foundational structures, be they graphs or groupoids.
- *C^*-Algebras and Asymptotic Spectral Theory* (*B. Silbermann*)
  An introduction to asymptotic spectral theory is presented using the elementary theory of C^* algebras. Given a bounded sequence of matrices with increasing size the spectra, ε-pseudospectra and the singular values of theses matrices are characterized. Three fundamental notions are discussed: stability, fractality and Fredholm sequences. The theory is applied to finite sections of quasidiagonal operators, Toeplitz operators, and operators with almost periodic diagonals.
- *Toeplitz Operator Algebras and Complex Analysis* (*H. Upmeier*)
  Recent investigations are presented concerning Hilbert spaces of holomorphic functions on hermitian symmetric domains of arbitrary rank and dimension, in relation to operator theory (Toeplitz C^*-algebras and their representations), harmonic analysis (discrete series of semi-simple Lie groups) and quantization (covariant functional calculi and Berezin transformation).

The articles were based contributions to the workshop, the majority of them being centered on the main topics of the workshop:

- Crossed product C^*-algebras. C^*-algebras of operators on Hardy and Bergman spaces. Invertibility theory for non-local C^*-algebras. Von Neumann algebras.
- Approximate methods in operator algebras. Asymptotic properties of approximation operators.
- Toeplitz, Hankel, and convolution type operators and algebras. Symbol calculi. Invertibility and index theory.
- Operator theoretical methods in diffraction theory. Factorization theory and integrable systems. Applications to Mathematical Physics.

Lisbon, September 2007

<div style="text-align:right">The Editorial Board</div>