# ICM 1998, Berlin, Aug. 18–27

## Abstracts of Plenary and Invited Lectures

### Section:

## 0. Plenary Lectures

1991 MS Classification:
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**Operator Spaces and Similarity Problems**

We will present an overview of the theory of "Operator Spaces" (sometimes called "non-commutative Banach spaces"), recently developed by Effros, Ruan, Blecher, Paulsen and others. An operator space is simply a linear subspace of the space $B(H)$ of all bounded operators on a Hilbert space $H$, but the morphisms acting between two such objects are taken to be the "completely bounded" maps which have played an important rôle in $C^*$-algebra theory in the 80's and 90's, following important earlier seminal work (Stinespring, Arveson, Lance, Effros, Choi, Haagerup, ...) on "completely positive" mappings. Central to this new theory is a specific new duality which parallels the usual Banach space one and which has proved to be very fruitful. The talk will present several applications of this ideology to operator algebras and to various similarity problems. We will discuss our recent example of a polynomially bounded operator in $l_2$ which is not similar to a contraction (answering negatively a question of Halmos), as well as the notion of "similarity degree", which is an operator algebraic analog of the maximal word-length in a finitely generated group.