# KARL-HEINZ INDLEKOFER

Karl-Heinz Indlekofer was born on January 2, in 1943. He has got his Ph.D. at the University of Freiburg (1970), he habilitated at the University of Frankfurt/Main (1974). Since then he is a professor at the University of Paderborn. Celebrating his 50th anniversary, an international meeting was organized in Visegrád (Hungary) 11-16.01.1993 with the title "Probabilistic Number Theory and Fractal Geometry".

This special volume contains mainly such articles which were presented at the conference.

His outstanding achievement in number theory and in research organization is highly valuated in Hungary. Doctor honoris causa degree has been donated him by the Kossuth Lajos University, Debrecen (14.12.1992). He has got the Memorial Medallion of the Eötvös Loránd University (14.11.1992), which is very rarely awarded for prominent persons. He managed numerous important international research projects in the frame of which deep and interesting results were found in different topics of mathematics.

His research activity is broad, let me concentrate only on his best results.

He introduced the notion of "uniformly summable arithmetical functions" and investigated the properties of various function spaces related to such functions ([15], [19], [24-25], [27], [30], [33], [41]).

In [48], written jointly with H. Daboussi, they gave an elementary, simple proof for the famous theorem of Halász (1968) on the summatory functions of multiplicative functions $g$ satisfying $|g(n)| \leq 1$. The original proof of Halász uses deep analytical tools. In [66] Indlekofer simplifies further the proof given in [48]. The proofs given in [48], [66] will be applicable for proving asymptotics of summatory functions of multiplicative functions under conditions that are weaker than in Halász's theorem.

Existence of the limit distribution of additive/multiplicative functions on short intervals and on arithmetically characterized subsets of integers are investigated in [14-17], [27], [29-32], [35-37], [41], [45].

In [23] he characterized those subsets $E \subseteq \mathbb{N}$ on which every non-vanishing multiplicative function $f$, not identically 1, should take on a value $\neq 1$.

The Stone-Čech compactification on $\mathbb{N}$, he introduced in [53-54] led him to very interesting and important results in probabilistic number theory. He showed that the most important theorems of probabilistic number theory can be directly deduced from known results in harmonic analysis, measure theory and probability theory. In this setting the Erdős-Wintner theorem is the special case of the three-series theorem of Kolmogorov. By making use of this fruitful conception, he introduces new important spaces (e.g. the space of almost multiplicative functions) and analyzes their properties. Previous nice results of Novoselev, Schwarz-Spilker-Knopfmacher and that of Mauclaire readily follow from his method.

The properties of the zeta-function (generating function) of arithmetical semigroups are investigated in [51], [58], [61] and the value-distribution of additive and multiplicative functions defined on arithmetical semigroups in [62].

In [38], [44], [47], [49] it was proved that if $f$ and $g$ are complex valued multiplicative functions for which $f(n)$ is close in some sense to $g(n+1)$, then $f$ and $g$ are very special functions.

In the frame of the research project "Allgemeine Ziffernentwicklung zur Darstellung algebraischer Zahlen und zur Simulation mathematischer Modelle" initiated and managed by the DFG and the Hungarian Academy of Sciences the possibility of massive exact computations in algebraic number fields were treated. Such algorithms were found by making use of which hard topological questions - connectedness of attractors of iterated function systems, just touching covering property of such attractors - are decided exactly, with computer calculation. One part of these results is published in [55], [60].

On behalf of the participating persons of the conference and the editorial board of this journal, let me express my best wishes to Professor K.-H. Indlekofer in his personal life and in his research activity.

Imre Kátai