

# Lecture Notes in Computer Science

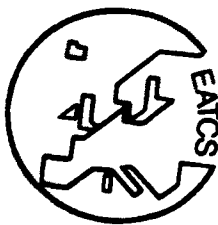
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## Automata, Languages and Programming

13th International Colloquium  
Rennes, France, July 15–19, 1986  
Proceedings



Edited by Laurent Kott



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## PREFACE

ICALP is the annual European summer conference on Theoretical Computer Science sponsored by the European Association on Theoretical Computer Science (EATCS).

ICALP stands for International Colloquium on Automata, Languages and Programming, but this conference intends to cover all important areas of theoretical computer science such as automata theory, formal language theory, analysis of algorithms, computational complexity, computability theory, mathematical aspects of programming language definition, logic and semantics of programming languages, program specification, theory of data structures, theory of data bases, cryptology, VLSI structures.

Previous colloquia were held in Nafplion (1985), Antwerpen (1984), Barcelona (1983), Aarhus (1982), Haifa (1981), Amsterdam (1980), Graz (1979), Udine (1978), Turku (1977), Edinburgh (1976), Saarbrücken (1974) and Paris (1972).

ICALP 86 was organized by INRIA and located at INRIA Center of Rennes (called IRISA).

From a total of 140 submitted papers, 48 have been accepted by the Selection Committee, that consisted of W. BRAUER (Hamburg), J. DIAZ (Barcelona), Ph. FLAJOLET (Rocquencourt), J. GRUSKA (Bratislava), J. KARHUMAKI (Turku), L. KOTT (Rennes), K. MEHLHORN (Saarbrücken), U. MONTANARI (Pisa), M. NIVAT (Paris), D. PERRIN (Paris), G. PLOTKIN (Edinburgh), A. RESTIVO (Palermo), R. SETHI (Murray Hill), W. THOMAS (Aachen).

There were three invited lecturers : M.P. SCHUTZENBERGER (Paris) with "Les ambiguïtés de la Pureté", A. SCHÖNHAGE (Tübingen) with "Tape versus pointers : a study in implementing fast algorithms" and G. HANSEL (Rouen) with "Symbolics dynamics, automata theory and coding". These lectures are however *not contained* in this volume.

I am grateful for the support from Bull Company, City of Rennes and Regional Council of Brittany.

I also thank all those who made this conference possible, especially the members of the Program Committee who consisted of members of the selection committee plus L. GUIBAS (Palo Alto) and G. ROZENBERG (Leiden), the staff of INRIA (Rennes and Rocquencourt), especially M. GLEVEO, S. GOSSET and E. LEBRET.

Rennes, May 1986

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