

## GUEST EDITORS' FOREWORD

This special issue of *Journal of Computer and System Sciences* contains a selection of six papers whose preliminary versions appeared in the proceedings of the 36th IEEE Symposium on Foundations of Computer Science held at Milwaukee, Wisconsin on October 23–25, 1995.

Beals gives a polynomial time decision procedure for an alternative proved by Tits: Given a finitely generated linear group, determine whether it contains a non-abelian free group or has a solvable subgroup of finite index.

Cai and Sivakumar resolve a conjecture of Hartmanis: If there exists a sparse hard set for  $P$  under logspace many-one reductions, then  $P = \text{LOGSPACE}$ .

Dey and Guha present an optimal algorithm to decide whether two triangulated 2-manifolds are homotopic, i.e., whether one can be continuously transformed to the other.

Haken and Cook prove an exponential lower bound on the size of monotone arithmetic circuits that solve an NP problem related to clique detection.

Naor and Reingold describe a new cryptographic primitive called pseudo-random synthesizer, which is essential for encryption and authentication, and they use it to obtain a parallel construction (in  $NC^2$ ) of a pseudo-random function.

Saks and Zhou prove that any language that can be recognized by a randomized algorithm that runs in space  $O(S)$  and always terminates can be recognized by a deterministic algorithm running in space  $O(S^{3/2})$ , thus beating the previously known bound of  $O(S^2)$ .

We thank the authors for agreeing to submit their papers to this special issue and the referees for their hard work in reviewing the papers.

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Stephen Cook  
*Guest Editors*