

EXCLU DU PRAT



automatica

A Journal of **IFAC** the International
Federation of Automatic Control

Volume 30 Number 1

January 1994

CONTENTS

- | | |
|---------------|--|
| S. Kahne | 1 A Message from the IFAC President |
| H. Kwakernaak | 3 New Faces—More Issues—Increasing service |
| V. Kučera | 5 A Message from the Publishers |
| | 7 Automatica Prize Paper Awards 1993 |

**SPECIAL ISSUE ON STATISTICAL SIGNAL PROCESSING AND CONTROL**

Guest Editors: B. Ottersten, T. Söderström and B. Wahlberg

B. Ottersten	9 Statistical Signal Processing and Control
K. V. S. Hari and U. Gummadavelli	11 PAPERS Effect of Spatial Smoothing on the Performance of Subspace Methods in the Presence of Array Model Errors
H. Krim and J. G. Proakis	27 Smoothed Eigenspace-based Parameter Estimation
F. T. Luk and S. Qiao	39 A New Matrix Decomposition for Signal Processing
Y. M. Cho, G. Xu and T. Kailath	45 Fast Recursive Identification of State Space Models via Exploitation of Displacement Structure
M. Verhaegen	61 Identification of the Deterministic Part of MIMO State Space Models given in Innovations Form from Input-Output Data
P. Van Overschee and B. De Moor	75 N4SID: Subspace Algorithms for the Identification of Combined Deterministic-Stochastic Systems
Q. Zhang, M. Basseville and A. Benveniste	95 Early Warning of Slight Changes in Systems
W. M. Steedly, C.-H. J. Ying and R. L. Moses	115 Statistical Analysis of TLS-based Prony Techniques
P. Stoica, P. Handel and T. Söderström	131 Approximate Maximum Likelihood Frequency Estimation
J.-J. Fuchs	147 Multiscale Identification of Real Sinusoids in Noise
H. Yang and Y. Hua	157 Statistical Analysis of an Eigendecomposition Based Method for 2-D Frequency Estimation
	169 Biographical Notes on Contributors to this Issue

INDEXED/ABSTRACTED IN: *Appl. Mech. Rev.*, *Curr. Cont.*, *ASCA*, *Aqua. Abstr.*, *Cam. Sci. Abstr.*, *Curr. Cont.*, *CompuMath*, *Curr. Cont./Eng. Tech. & Applied Sci.*, *Comput. Cont.*, *Eng. Ind.*, *INSPEC Data.*, *Info. Sci. Abstr.*, *Math. R.*, *Oper. Res. Manage. Sci.*, *PASCAL-CNRS Data.*, *Curr. Cont. Sci. Cit. Ind.*, *Curr. Cont. SCISEARCH Data.*, *SSSA/CISA/ECA/ISMEC*, *Zentralblatt für Mathematik*

ISSN 0005-1098
ATCAA9 30(1) 1-174 (1994)

**Pergamon Press**

OXFORD · NEW YORK · SEOUL · TOKYO