Lecture Notes in Operations Research

5

Edited by Xiang-Sun Zhang De-Gang Liu Ling-Yun Wu

OPERATIONS RESEARCH AND ITS APPLICATIONS

The Fifth International Symposium, ISORA'05 Tibet, China, August 8–13, 2005 Proceedings

Lecture Notes in Operations Research

Ding-Zhu Du and Xiang-Sun Zhang (Eds.)

Advisory Board

Guang-Hui Hsu, Masao Iri, J. B. Rosen and Min-Yi Yue

Edited by Xiang-Sun Zhang De-Gang Liu Ling-Yun Wu

Operations Research and Its Applications

The Fifth International Symposium, ISORA'05 Tibet, China, August 8–13, 2005 Proceedings

WORLD PUBLISHING CORPORATION Beijing China

Series Editors

Ding-Zhu Du
Department of Computer Science
University of Minnesota
Minneapolis, MN 55455, USA
also with
Institute of Applied Mathematics
Academy of Mathematics and Systems
Science
Chinese Academy of Science
Beijing 100080, P.R. China

Xiang-Sun Zhang
Institute of Applied Mathematics
Academy of Mathematics and Systems
Science
Chinese Academy of Science
Beijing 100080, P.R. China

Volume Editors

Xiang-Sun Zhang De-Gang Liu Ling-Yun Wu Institute of Applied Mathematics Academy of Mathematics and Systems Science Chinese Academy of Sciences Beijing 100080, P.R. China

Published by **Beijing World Publishing Corporation** 137 Chaonei Dajie, Beijing 100010 The People's Republic of China

Copyright ©2005 by Beijing World Publishing Corporation

The book has been photographically reproduced from the best available copy. Unauthorized use might infringe on privately owned patents of publication rights. Please contact the individual authors for the permission to reprint or otherwise use information from their papers.

ISBN 7-5062-7277-6

Printed in the People's Republic of China

ABOUT ISORA'05

THEME AND SCOPE

The 5th International Symposium on Operations Research and Its Applications (ISORA'05), organized by Asia & Pacific Operations Research Center (APORC), Institute of Applied Mathematics, Academy of Mathematics and Systems Science, CAS, and the Operations Research Society of China, is held in Lhasa–Nyingchi, Tibetan Autonomous Region, China from August 8 to 13, 2005. Cosponsors of ISORA'05 also include Natural Science Foundation of China and China Talent Fund.

ISORA is a series of international symposiums with goals to provide an international forum for scientists, researchers, educators, and practitioners to exchange ideas and approaches, to present research findings and state-of-the-art solutions, to share experiences on potentials and limits, and to open new avenues of research and developments, on all issues and topics related to the theories and applications of Operations Research. Theme of the ISORA'05 focuses on "OR in the Global and Networked World". We are particularly interested in submissions that report on experimental and applied research motivated by real-world problems. Theoretical and applied papers are expected to show convincingly the usefulness and efficiency of optimization algorithms discussed in a practical setting. Typical, but not exclusive, topics of interest are:

Optimization theory
Algorithm analysis and design
Logistics management
Telecommunication networks
Bioinformatics
Applications in industry, service, finance, business and biology.

PROGRAM COMMITTEE

ORGANIZING COMMITTEE

Xiangsun Zhang (China), CoChair Masanori Fushimi (Japan), CoChiar Yaxiang Yuan (China) Richard C. Larson (USA) Toshiharu Hasegawa (Japan) Sung Joo Park (Korea) Tatsuo Oyama (Japan) Toshihide Ibaraki (Japan) Weiwu Fang (China) Wuyi Yue (Japan) Xiuli Chao (USA) Hanqin Zhang (China) Degang Liu (China) Mingzhe Li (Japan) Yuzhong Zhang (China) Lingyun Wu (China)

PAPERS AND CONTRIBUTING AUTHORS

Twenty-seven full papers in this volume cover wide range of operations research theory and practice. Authors of these papers come from Canada, China mainland, Hong Kong, France, Germany, Japan, Korea, Singapore, UK, and the United States. Many leading researchers in various areas contributed their overview and introduction in their fields besides specific deep research achievements. During the symposium focusing sessions are organized such as in policy study, logicstics, scheduling, uncertainty systems, bioinformatics, and computer science. Since the ISORA'05 is held in Lahsa and Nyingchi of Tibet, on the rolling hills of high plateau and stunning Himalayas, the conference size was limited. Although the over 3600m height caused unusual feeling or weakness to most of participants, academic exchange activities are successful. At the same time, we all enjoy very much the fantastic landscape of "Real Shangri-la" and unique culture of Tibetan people.