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International Federation of Automatic Control

AUTOMATIC CONTROL IN AEROSPACE 2001

A Proceedings volume from the 15th IFAC Symposium
Bologna/Forlì, Italy, 2 - 7 September 2001

Edited by

G. BERTONI

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Published for the

INTERNATIONAL FEDERATION OF AUTOMATIC CONTROL

by

PERGAMON
An Imprint of Elsevier Science

ELSEVIER SCIENCE Ltd
The Boulevard, Langford Lane
Kidlington, Oxford OX5 1GB,UK

Elsevier Science Internet Homepage
http://www.elsevier.com

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First edition 2002

Library of Congress Cataloging in Publication Data

A catalogue record for this book is available from the Library of Congress

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

ISBN 0-08-043684
ISSN 1474-6670

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15th IFAC SYMPOSIUM ON AUTOMATIC CONTROL IN AEROSPACE 2001

Sponsored by
International Federation of Automatic Control (IFAC)
Technical Committee on Aerospace

Supported by
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Provincia di Bologna

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PREFACE

The 15th IFAC Symposium on Automatic Control in Aerospace was held in Bologna/Forli, Italy, 2 - 7 September 2001.

To recall what was written in the Call for Papers presenting the Scope of the Conference:

"Even if extraterrestrial space activity is slowing down, there are several reasons to foresee that the sector of Automatic Control in Aerospace will continue to be the field where the most advanced theories of Automatic Control are applied.

One of these reasons is that, as is well known, within 5 or 10 years the traditional NAVAIDS will be substituted by satellite-based systems such as GPS, GNSS etc. Consequently, there will be an intensification of studies on the control of aircraft both en route and in the terminal areas, and also on the manipulation and integration of data, as safety reasons prohibit the reliance on satellite constellations alone.

Moreover, satellites will take a major role in developing a global communication system. These changes and these new visions require control engineers to solve the many challenging and exciting engineering problems, and will encourage new ideas and practices."

The Symposium showed that in the sector of Automatic Control in Aerospace, the problems, of which the solutions lie in the most modern developments of system and control automatic theory, are many more than the above mentioned ones. This is clearly shown in the contributed papers, as well as in the plenary lectures, which have presented the solution to real world problems using high-level theoretical tools. Internal-model-based control of non-linear systems, adaptive control of flexible systems, tracking and surveillance systems, robust avionics dead reckoning filtering, pursuit-evasion games are only a few examples of the theoretical background used in many papers.

Another key aspect of the Symposium was the presentation of important applications already accomplished, or on the way to being implemented, such as; space robotics for interplanetary missions, integration of conventional and satellite-based navigation, advances in missile guidance and control systems and last, but not least, the Galileo Project. Moreover, let us remember the sector on the sensors of the new generation and the methods for design of spacecraft robust fault tolerant control systems.

In conclusion, it is believed that once again, the theme of Automatic Control in Aerospace proved to be an area with an inexhaustible source of problems requiring solutions involving high-level theoretical tools.

Finally, I would like to thank all of the participants for taking part and sharing their knowledge and expertise with others.

Gianni Bertoni
Editor

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