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PREFACE

The issue contains a selection of papers presented at the conference on *"50 Years of Optimal Control"*, which was held in Będlewo (Poland) on September 15 - 19, 2008. The purpose of the conference was to discuss, in the possibly broadest context, the state of the art, historical aspects and perspectives for the future development of the mathematical theory of optimal control, which was brought to life, as an independent branch of mathematics, in the 1950s.

The conference was dedicated to:
- Francis H. Clarke,
- Asen L. Dontchev,
- William W. Hager,
- Bronisław Jakubczyk,
- Irena Lasiecka,
- Boris S. Mordukhovich,
- Nikolai P. Osmolovskii,
- Hector J. Sussmann,
- Richard B. Vinter

on the occasion of their 60th anniversary, in the recognition of their outstanding contributions to the optimal control theory.

The committees of the conference consisted of:

Scientific Committee
- J. Frédéric Bonnans (France),
- Hélène Frankowska (France),
- Alexander D. Ioffe (Israel),
- Philip Loewen (Canada),
- Kazimierz Malanowski (Poland),
- Helmut Maurer (Germany),
- Maria R. de Pinho (Portugal),
- Witold Respondek (France),
- R. Tyrrell Rockafellar (USA),
- Vladimir M. Tikhomirov (Russia),
- Fredi Tröltzsch (Germany),
- Peter Wolenski (USA).

Organizing Committee
- Alexander D. Ioffe (Israel),
- Kazimierz Malanowski (Poland),
- Fredi Tröltzsch (Germany).

The conference was sponsored by the following institutions:
- Stefan Banach International Mathematical Center, Warsaw, Poland,
- Deutsche Forschungsgemeinschaft, Germany,

- Mathematical Institute of the Polish Academy of Sciences, Warsaw, Poland,
- Systems Research Institute of the Polish Academy of Sciences, Warsaw, Poland.

For purposes of the conference, the following main directions in the optimal control theory were distinguished:

- The maximum principle and first order optimality conditions,
- Second order conditions and sensitivity analysis,
- Geometric control theory,
- Hamilton - Jacobi theory,
- Optimal control of distributed parameter systems.

Accordingly, groups of leading scientists, working in each of these directions, were invited to present their recent results and the state of the art reviews, as well as to discuss the perspective of further development. Altogether, 78 persons from 17 countries participated in the conference, 25 plenary lectures and 36 contributed talks, in two parallel sessions, were delivered. Besides that, an informal session devoted to the history of optimal control theory was organized.

All papers in the present issue of *Control and Cybernetics* have passed a thorough reviewing process, standard for this journal. The issue is physically divided, for purely technical reasons, into two parts, referred to as issue 4A/2009 and 4B/4009, respectively, as this is indicated in the table of content. More importantly, though, it is divided in terms of substance matter, into two groups of papers. First, there are four papers related to the history of optimal control theory, which are followed by current contributions to it. In both these groups of papers the alphabetical order of the authors is preserved.

Alexander Ioffe Kazimierz Malanowski Fredi Tröltzsch