PREFACE

The "Algebraic Methods in Dynamical Systems" Conference took place at the Będlewo Mathematical Conference Center from May 16th to May 22nd 2010, as a part of the Banach Center and European Science Foundation Conference Programs. The first Conference under this title was held two years before at the Universitat Politècnica de Catalunya, organized by Juan José Morales-Ruiz. We thank him for passing the baton to us and for his warm encouragement.

Following the suggestion of our colleagues Claudine Mitschi and Felix Ulmer, it was our pleasure to dedicate this Conference to Michael Singer on the occasion of his 60th birthday. We initiated our research in Differential Galois Theory motivated by Michael's papers and we deeply appreciate his valuable mathematical advice and his availability to help. We raise a toast to wish him a long and fruitful life: Sto lat, Michael!

The Conference brought together different aspects of the study of differential equations. Talks on algebraic aspects and foundations of differential Galois theory concerned differential algebraic groups, Tannakian approach, complete Picard-Vessiot closure, Hurwitz series, Khovanskii topological Galois theory. Nonlinear differential Galois theories deserve to be distinguished. Bernard Malgrange presented his work on Lie pseudogroups and differential Galois theory while Hiroshi Umemura discussed a unified general Galois theory for differential and difference extensions. Several lectures were devoted to difference analogues of Malgrange theory. Analytic theories of differential systems discussed included applications of power geometry to nonlinear problems and different deep questions around Hilbert's 16th problem. In several short talks and posters, the problem of the integrability of dynamical systems was studied by means of Morales-Ramis theory. We think that these Proceedings form a good account of the matters considered during the meeting.

We express our thanks to all the participants for their enthusiasm and interest, especially to the speakers, chairmen and poster presenters. We are grateful to the authors of this volume for the high level of their contributions and to the referees for their dedicated work.

We thank the Polish Academy of Sciences and the European Science Foundation for the financial support of the Conference and Miss Victoria Ibbertson for her kind help during the meeting. The financial support of the Faculty of Mathematics and Computer Science of the Jagiellonian University and the Faculty of Mathematics of the University of Barcelona is gratefully acknowledged.

Teresa Crespo[1] *and Zbigniew Hajto*