

PREFACE

The conference *Formal and Analytic Solutions of Differential and Difference Equations* was held from August 8 to August 13, 2011, in the Mathematical Research and Conference Center in Będlewo. The conference was co-organized by the Institute of Mathematics of the Polish Academy of Sciences (IM PAN), Faculty of Mathematics, Informatics and Mechanics of the University of Warsaw (MIM UW) and Faculty of Mathematics and Economics of the University of Ulm (UU).

The Organizing Committee of the conference consisted of Werner Balser (UU), Galina Filipuk (MIM UW), Grzegorz Łysik (IM PAN) and Sławomir Michalik (Cardinal Stefan Wyszyński University, Warsaw). The Scientific Committee included Werner Balser, Marco Bertola, Boele Braaksma, Rodney Halburd, Yoshishige Haraoka, Stefan Hilger, Donald Lutz, Masatake Miyake, Hidetoshi Tahara and Henryk Żołądek.

Among the participants of this conference were many of the world's leading experts in the theory of differential equations in the complex domain, especially of

- Painlevé equations,
- holomorphic vector fields and normal forms,
- summability of WKB solutions,
- Gevrey order and summability of formal solutions for ordinary and partial differential equations,
- Stokes phenomena of formal solutions of non-linear PDEs, and the small divisors phenomenon,
- summability of solutions of difference equations,
- applications to integrable systems and mathematical physics.

The scope of the conference has been to inform, especially the participating group of young scientists, on the most recent achievements in the fields listed above, and to suggest new directions of research, such as an extension of the theory of formal power series solutions to partial difference equations, for the near future. It is fair to say that this goal has been achieved in the excellent plenary lectures delivered in the morning sessions, and equally so in the informal discussions. None the less, the organizers and participants felt that a more detailed presentation of at least some of the results presented in the talks would greatly help to coordinate ongoing and beginning research activities. This shall be done in the articles included in this volume! The editors hope that these Proceedings shall be appreciated by a large number of scientists in all parts of the world.

Most of the papers in the Proceedings contain original results presented during the conference, but a few are of survey character. All papers have been individually refereed

by independent reviewers. The editors of the volume express sincere thanks to all the referees for their dedicated work.

We are grateful to the Stefan Banach International Mathematical Center and the University of Warsaw for financial support of the conference. We would also like to cordially thank the staff of the Będlewo Conference Center for their warm hospitality.

*Werner Balser, Galina Filipuk,
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