

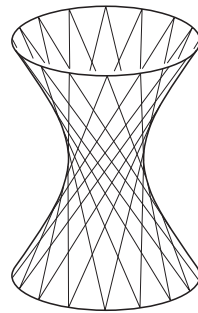
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Parameter Spaces



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PREFACE

This book contains a baker's dozen papers which have been written on the occasion of the Banach Center conference "Parameter Spaces; enumerative geometry, algebra and combinatorics".

About the conference

The conference, organized with collaboration of the ITEG¹, was held in Banach Center in Warsaw during the first week of February 1994. The organizers of the meeting were: Dan Laksov, Piotr Pragacz and Stein Arild Strømme. The following is the list of participants of the conference.

G. Barthel (Konstanz), A. Białynicki-Birula (Warsaw), E. Bifet (MPI Bonn), M. Boij (Stockholm), M. Brion (Grenoble), F. Cukierman (MPI Bonn), C. De Concini (Pisa), G. Duchamp (Rouen), J. Elizondo (Trieste), G. Ellingsrud (Oslo), C. Faber (Amsterdam), B. Fantechi (MPI Bonn), L. Göttsche (MPI Bonn), K. Helstrup (Bergen), K. Jaczewski (Warsaw), T. Johnsen (Tromsø), J. Jurkiewicz (Warsaw), Ch. Keem (MPI Bonn), A. Klyachko (Samara), J. Konarski (Warsaw), W. Kraśkiewicz (Toruń), D. Krob (Paris), S. Kroneck (MPI Bonn), D. Laksov (Stockholm), A. Langer (Warsaw), A. Lascoux (Paris), B. Leclerc (Paris), P. Meurer (Bergen), I. Mundet I Riera (Barcelona), P. Pragacz (MPI Bonn), J. Ratajski (Warsaw), I. Sols (Madrid), J. Świącicka (Warsaw), M. Szurek (Warsaw), J.-Y. Thibon (Paris), A. Thorup (Copenhagen), E. Tjøtta (Bergen), J. Włodarczyk (Bochum), B. Wybourne (Toruń), S. Xambo-Descamps (Barcelona).

Twenty eight talks divided into minicourses and research lectures covered almost all subjects of those chapters of enumerative geometry, algebra and combinatorics which are related to parameter spaces. Introductions to problems and techniques in the theory of parameter spaces were covered in five minicourses that were of an elementary nature. Numerous coffee/tea-breaks and late night "ad hoc sessions" stimulated many discussions and exchange of ideas.

List of minicourses

1. G. Ellingsrud: "Hilbert schemes";
2. C. Faber: "Enumerative geometry of the moduli spaces of curves";
3. J. Jurkiewicz: "An introduction to toric varieties and toric combinatorics";
4. A. Lascoux and P. Pragacz: "Schur-, Schubert- and Grothendieck polynomials";
5. A. Thorup: "Complete spaces of quadrics".

¹ ITEG = Intersection theory and enumerative geometry group of EuroProj.

List of lectures

1. A. Białynicki-Birula: “Good projective quotients”;
2. E. Bifet: “On the cohomology ring of complete quadrics”;
3. E. Bifet: “On some questions concerning vector bundles on algebraic curves”;
4. M. Brion: “Intersection theory on spherical varieties”;
5. C. De Concini: “Quantum Schubert cells and representations at roots of 1”;
6. J. Elizondo: “The Euler series of toric varieties”;
7. L. Göttsche: “Change of polarization and Hodge numbers of moduli space of stable sheaves on surfaces”;
8. C. Keem: “Reducible Hilbert schemes of smooth curves”;
9. A. Klyachko: “Toric bundles and moduli spaces of vector bundles on the projective spaces”;
10. A. Klyachko: “Toric sheaves, Hermitian operators and moduli spaces”;
11. B. Leclerc: “Domino tableaux and the decomposition of the symmetric square of an irreducible GL_n -module”;
12. J. Ratajski: “Pieri-type formulas for Lagrangian and orthogonal Grassmannians”;
13. I. Sols: “Moduli of infinitesimal data in the projective spaces”.

Acknowledgements

We would like to thank the participants of the conference and especially the speakers for their contribution to make the conference a success.

We also wish to thank EuroProj and the Max-Planck-Institut für Mathematik for the financial support of the conference.

The generous help of Krzysztof Jaczewski, Jan Ratajski, Michał Szurek and Anders Thorup at various stages of organization of the conference was invaluable. We gratefully thank Anders, Jan and Michał for all they did for the meeting. Unfortunately, it is not possible to thank Krzysztof who passed away during the preparation of this volume. The atmosphere of our meeting greatly benefited from his enthusiasm, cheerfulness and a unique warm sense of humor. . . His presence will be deeply missed. We dedicate this volume to his remembrance.

About the book

The papers contained in this volume concern some selected topics in the theory of parameter spaces. Ten of them were written by the participants of the conference and the remaining three are invited papers of authors who were not able to attend the meeting.

The subjects of the articles include: toric varieties, Hilbert schemes, complete quadrics, moduli spaces of curves, space curves, residues and cohomology, degeneracy loci, flag and Schubert varieties, Schur functions, Schubert polynomials and Hecke algebras.

The reader can find here research contributions, expository papers bringing some new results and, finally, purely survey articles. All the papers were carefully refereed.

The character of the contributions is very heterogeneous both in the style of exposition and length. To some extent, this reflects a very heterogeneous character of the conference talks.

Banach Center wishes to thank the authors for their contributions.

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