CONTEMPORARY MATHEMATICS

153

Linear Algebraic Groups and Their Representations

Conference on Linear Algebraic Groups and Their Representations
March 25–28, 1992
Los Angeles, California

Richard S. Elman
Murray M. Schacher
V. S. Varadarajan
Editors

American Mathematical Society

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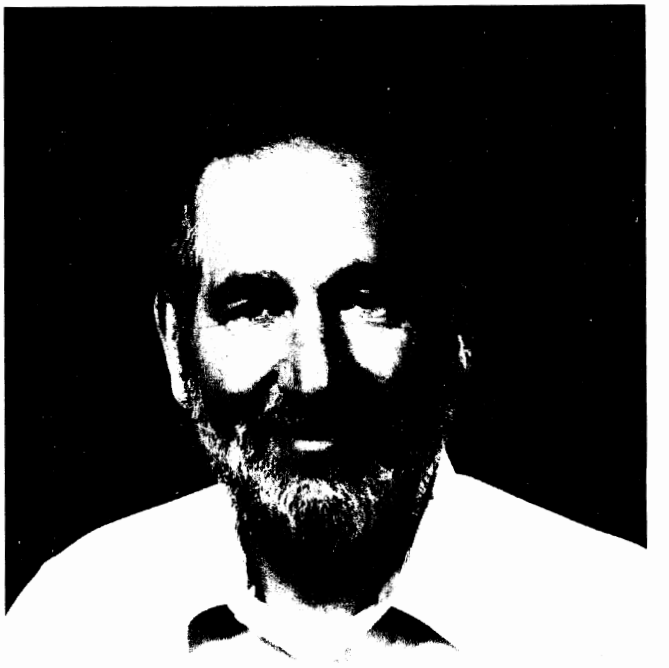

Robert Steinberg

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Introduction

आ नो भद्राः क्रतवो यन्तु विश्वतः ।

May the good things come to us from everywhere

These Proceedings contain papers requested by the organizers or presented in person at the Conference on Linear Algebraic Groups and Their Representations held at UCLA March 25–28, 1992, on the occasion of the retirement of Professor Robert Steinberg. Support was generously provided by the National Security Agency[1], the Mathematical Sciences Research Institute, the Chancellor's Office of UCLA, and the Mathematics Department of UCLA. Mathematicians came to UCLA from Asia, Australia, Europe, and North America to participate in this conference honoring Robert Steinberg. They ranged from senior mathematicians to recently graduated mathematicians and graduate students. In addition to the many visitors, mathematicians throughout Southern and Northern California participated in the conference on a daily or occasional basis.

The idea of the conference was to discuss the current status of the field and to suggest directions for future research in those areas of linear algebraic groups and their representations that have been decisively influenced by Robert Steinberg throughout his distinguished career. The success of this goal is indicated by the papers contained here. All papers appearing in this volume are final and will

[1]NSA MDA904-92-H-3002

not be submitted for publication elsewhere in more detailed form.

The Organizing Committee for the conference consisted of Walter Feit, T.A. Springer, Murray Schacher and V.S. Varadarajan. Special assistance was rendered by David Cantor in the preparation of grant proposals. Richard Elman joined us to edit this volume. We were ably assisted by Goody Dhillon, Julie Speckart, Alice Ramirez, Elaine Barth, and Michael Olsson, all of the UCLA Mathematics Department. Without their patient aid, this conference could never have happened. Editorial assistance for these Proceedings has been graciously rendered by Christine Thivierge and Donna Harmon of the American Mathematical Society, and external referees whom we thank while respecting their anonymity. We also wish to thank the American Mathematical Society for publishing the proceedings of this conference in their Contemporary Mathematics series.

Some of the papers bear dedications setting forth the authors' own affection and scientific indebtedness. In the other cases, contributors requested to be included in a general expression of these sentiments. On behalf of all the participants, we present Bob with these efforts. We hope they are worthy of him. We thank him for the standards that he has set for us. We rejoice that we continue to enjoy and to cherish his advice and his friendship.

We truly feel that the great diversity and range of the talks at the conference were genuinely reflective of the spirit of the Vedic invocation given on the previous page[2] with which the conference began.

Richard S. Elman
Murray M. Schacher
V. S. Varadarajan

[2] *Rg Veda, 1, 89*

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R. Boltje	Extending constructible sets on 1-dimensional characters
V. Deodhar	A survey of recent results in Kazhdan-Lustig theory and related topics
M. Dyer	Dihedral groups and projective functors
W. Feit	Extending Steinberg Characters
S. Gelfand	Examples of tensor categories from representation theory
R. Guralnick	Primitive Permutation Representations
W. Haboush	Parabolic schemes on algebraic groups
G. Lusztig	The quantum Frobenius map and Steinberg's tensor product theorem
K. Misra	Quantum affine Lie algebras and affine crystals
B. Parshall	Ext groups and duality
M.S. Raghunathan	The first Betti Number of Locally Symmetric Spaces
N. Reshetikhin	Representations of the double of Hopf algebras
R. Richardson	Parabolic subgroups with abelian unipotent radical
Z. Richstein	Matrix invariants
J. Rickard	Finite group actions and l-adic cohomology
M. Rosso	*-balanced categories and subfunctors
D. Saltman	Rationality of invariant fields
G. Schwarz	The linearization of equivariant Serre problems for reductive groups
L. Scott	Kazhdan-Lustig theory and some problems on automorphisms

G. Seelinger	A completion of the space of matrix invariants
C.S. Seshadri	Moduli of vector bundles on curves
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Linear Algebraic Groups and Their Representations
Richard S. Elman, Murray M. Schacher,
and V. S. Varadarajan, Editors

This book contains the proceedings of the Conference on Linear Algebraic Groups and Their Representations, held at UCLA in March 1992. The central theme is the fundamental nature of this subject and its interaction with a wide variety of active areas in mathematics and physics. Linear algebraic groups and their representations interface with a broad range of areas through diverse avenues—with algebraic geometry through moduli spaces, with classical invariant theory through group actions on polynomial rings, with enumerative and combinatorial geometry through flag manifolds, and with theoretical physics through Kac–Moody algebras and quantum groups. Collected here are both surveys and original contributions by eminent specialists, reflecting current developments in the subject. This book is one of the few available sources that brings together such a wide variety of themes under a single unifying perspective.

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