

# Lecture Notes in Mathematics

Edited by A. Dold and B. Eckmann

Subseries: Fondazione C.I.M.E., Firenze

Adviser: Roberto Conti

996

---

## Invariant Theory

Proceedings of the 1<sup>st</sup> 1982 Session of the  
Centro Internazionale Matematico Estivo (C.I.M.E.)  
Held at Montecatini, Italy, June 10–18, 1982

Edited by F. Gherardelli

---



Springer-Verlag  
Berlin Heidelberg New York Tokyo 1983

**Editor**

Francesco Gherardelli

Istituto Matematico U. Dini, Università degli Studi

Viale Morgagni 67 A, 50134 Firenze, Italy

**AMS Subject Classifications (1980): 14 D 20, 14 D 25**

**ISBN 3-540-12319-9 Springer-Verlag Berlin Heidelberg New York Tokyo**

**ISBN 0-387-12319-9 Springer-Verlag New York Heidelberg Berlin Tokyo**

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically those of translation, reprinting, re-use of illustrations, broadcasting, reproduction by photocopying machine or similar means, and storage in data banks. Under § 54 of the German Copyright Law where copies are made for other than private use, a fee is payable to "Verwertungsgesellschaft Wort", Munich.

© by Springer-Verlag Berlin Heidelberg 1983  
Printed in Germany

Printing and binding: Beltz Offsetdruck, Hemsbach/Bergstr.  
2146/3140-543210

C.I.M.E. Session on Invariant Theory

List of Participants

- B. Ådlandsvik, Matematisk Institutt, Allégt. 55, 5000 Bergen, Norway
- A. Albano, Istituto di Geometria "C. Segre", Via Principe Amedeo 8, 10123 Torino
- G. Almkvist, PL 500, 24300 H5ör, Sweden
- L. Amodei, Istituto Matematico Università, Via F. Buonarroti 2, 56100 Pisa
- F. Arnold, Willy-Andreas-Allee 5, 7500 Karlsruhe, West Germany
- E. Ballico, Scuola Normale Superiore, Piazza dei Cavalieri 7, 56100 Pisa
- R. Benedetti, Istituto Matematico "L. Tonelli", Via F. Buonarroti 2, 56100 Pisa
- J. Bertin, 18 rue du Sénéchal, 31000 Toulouse, France
- C. Blondel, UER de Math. 45-55, Univ. Paris VII, 2 Pl. Jussieu, 75221 Paris, France
- J. F. Boutot, 15 rue Erard, 75012 Paris, France
- M. Brion, E.N.S., 45 rue d'Ulm, 75005 Paris, France
- F. Catanese, Istituto Matematico Università, Via F. Buonarroti 2, 56100 Pisa
- A. Collino, Istituto di Geometria, Università, Via Principe Amedeo 8, 10123 Torino
- P. Cragdolini, Istituto Matematico Università, Via F. Buonarroti 2, 56100 Pisa
- M. Dale, Matematisk Institutt, Allégt. 55, 5000 Bergen, Norway
- C. De Concini, Istituto Matematico Università, Via F. Buonarroti 2, 56100 Pisa
- A. Del Centina, Istituto Matematico Università, Viale Morgagni 67/A, 50134 Firenze
- G. D'Este, Istituto di Algebra e Geometria, Via Belzoni 7, 35100 Padova
- D. Dikranjan, Istituto Matematico Università, Via F. Buonarroti 2, 56100 Pisa
- G. Elencwajg, IMSP-Mathématiques, Parc Valrose, 06034 Nice-Cedex, France
- J. Eschgfäller, Istituto Matematico Università, Via Machiavelli 35, 44100 Ferrara
- P. Gerardin, UER de Mathématiques, Université Paris VII, 2 Place Jussieu,  
75231 Paris-Cedex, France
- F. Gherardelli, Istituto Matematico Università, Viale Morgagni 67/A, 50134 Firenze
- P. Gianni, Dipartimento di Matematica, Via F. Buonarroti 2, 56100 Pisa
- D. Gieseke, Department of Mathematics, UCLA, Los Angeles, Cal. 90024, USA
- A. Gimigliano, Viale della Repubblica 85, 50019 Sesto Fiorentino, Firenze
- K. Girstmair, Institut für Mathematik, Universität Innsbruck, Innrain 52,  
A-6020 Innsbruck, Austria
- A. Helversen-Pasotto, Laboratoire associé du CNRS n. 168, Département de Mathématique,  
IMSP, Université de Nice, Parc Valrose, 06034 Nice-Cedex, France

#### IV

- T. Johnsen, Lallakroken 8 C, Oslo 2, Norway
- V. Kac, Department of Mathematics, MIT, Cambridge, Mass. 02139, USA
- M. Laglasse-Decauwert, USMG Institut Fourier, Mathématiques Pures, B.P. 116,  
38402 Saint Martin D'Heres, France
- A. Lanteri, Istituto Matematico "F. Enriques", Via C. Saldini 50, 20133 Milano
- A. Lascoux, L.I.T.P., UER Maths Paris VII, 2 Place Jussieu, 75251 Paris Cedex 05,  
France.
- D. Luna, 12 Rue Fracy, 38700 La Tronche, France
- V. Mehta, Department of Mathematics, The University of Bombay, Bombay, India
- M. Meschiari, Via Baraldi 12, 41100 Modena
- D. Montanari, Via Asmara 38, 00199 Roma
- J. Oesterlé, E.N.S., 45 rue d'Ulm, 75005 Paris, France
- P. Oliverio, Scuola Normale Superiore, Piazza dei Cavalieri 7, 56100 Pisa
- M. Palleschi, Via Bergognone 27, 20144 Milano
- F. Pauer, Institut für Mathematik, Universität Innsbruck, Innrain 52,  
A-6020 Innsbruck, Austria
- E. Previato, Department of Mathematics, Harvard University, Cambridge, Mass. 02138, USA
- M. Roberts, 9 Pelham Grove, Liverpool 17, England
- N. Rodinò, Via di Vacciano 87, 50015 Grassano, Firenze
- S. Rosset, School of Mathematics, University of Tel-Aviv, Tel-Aviv, Israele
- P. Salmon, Via Rodi 14/9, 16145 Genova
- W. K. Seiler, Mathematisches Institut II, Englerstrasse 2, 7500 Karlsruhe 1, West  
Germany
- M. Seppälä, Fakultät für Mathematik, Universität Bielefeld, BRD-4800 Bielefeld 1,  
Germania Occ.
- R. Smith, Univ. of Georgia, Graduate Students Res. Center, Athens, Ga 30602, USA
- C. Traverso, Dipartimento di Matematica, Via F. Buonarroti 2, 56100 Pisa
- C. Turrini, Istituto Matematico "F. Enriques", Via C. Saldini 50, 20133 Milano
- L. Verdi, Istituto Matematico Università, Viale Morgagni 67/A, 50134 Firenze
- A. Verra, Via Assarotti 16, 10122 Torino
- G. Weill, 300 E 33rd Street, New York, N.Y. 10016, USA

## I N D E X

C. DE CONCINI and C. PROCESI, <i>Complete symmetric varieties</i> .....	1
D. GIESEKER, <i>Geometric invariant theory and applications to moduli problems</i> ..	45
V. G. KAC, <i>Root systems, representations of quivers and invariant theory</i> ....	74
G. ALMKVIST, <i>Invariant of <math>\mathbb{Z}/p\mathbb{Z}</math> in characteristic <math>p</math></i> .....	109
A. LASCOUX and M.P. SCHÜTZENBERGER, <i>Symmetric and flag manifolds</i> .....	118
V. B. MEHTA, <i>On some restriction theorems for semistable bundles</i> .....	145