

Graduate Texts in Mathematics

Roe Goodman · Nolan R. Wallach **Symmetry, Representations, and Invariants**

Goodman · Wallach

GTM
255



**Symmetry, Representations,
and Invariants**

Symmetry is a key ingredient in many mathematical, physical, and biological theories. Using representation theory and invariant theory to analyze the symmetries that arise from group actions, and with strong emphasis on the geometry and basic theory of Lie groups and Lie algebras, *Symmetry, Representations, and Invariants* is a significant reworking of an earlier highly-acclaimed work by the authors. The result is a comprehensive introduction to Lie theory, representation theory, invariant theory, and algebraic groups, in a new presentation that is more accessible to students and includes a broader range of applications.

The philosophy of the earlier book is retained, i.e., presenting the principal theorems of representation theory for the classical matrix groups as motivation for the general theory of reductive groups. The wealth of examples and discussion prepares the reader for the complete arguments now given in the general case.

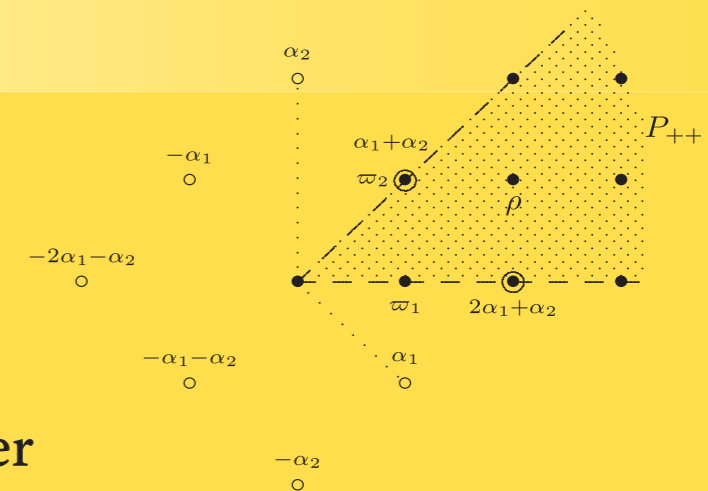
Key Features of *Symmetry, Representations, and Invariants*:

- Early chapters suitable for honors undergraduate or beginning graduate courses, requiring only linear algebra, basic abstract algebra, and advanced calculus
- Applications to geometry (curvature tensors), topology (Jones polynomial via symmetry), and combinatorics (symmetric group and Young tableaux)
- Self-contained chapters, appendices, comprehensive bibliography
- More than 350 exercises (most with detailed hints for solutions) further explore main concepts
- Serves as an excellent main text for a one-year course in Lie group theory
- Benefits physicists as well as mathematicians as a reference work

ISBN 978-0-387-79851-6



springer.com



 Springer