

1. Record Nr.	UNINA9910480073703321
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Titolo	Linear Algebraic Groups [[electronic resource] /] / by Armand Borel
Pubbl/distr/stampa	New York, NY : , : Springer New York : , : Imprint : Springer, , 1991
ISBN	1-4612-0941-2
Edizione	[2nd ed. 1991.]
Descrizione fisica	1 online resource (XI, 290 p.)
Collana	Graduate Texts in Mathematics, , 0072-5285 ; ; 126
Disciplina	512.55 512.482
Soggetti	Topological groups Lie groups Topological Groups, Lie Groups
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and indexes.
Nota di contenuto	AG—Background Material From Algebraic Geometry -- §1. Some Topological Notions -- §2. Some Facts from Field Theory -- §3. Some Commutative Algebra -- §4. Sheaves -- §5. Affine K-Schemes, Prevarieties -- §6. Products; Varieties -- §7. Projective and Complete Varieties -- §8. Rational Functions; Dominant Morphisms -- §9. Dimension -- §10. Images and Fibres of a Morphism -- §11. k-structures on K-Schemes -- §12. k-Structures on Varieties -- §13. Separable points -- §14. Galois Criteria for Rationality -- §15. Derivations and Differentials -- §16. Tangent Spaces -- §17. Simple Points -- §18. Normal Varieties -- References -- I—General Notions Associated With Algebraic Groups -- §1. The Notion of an Algebraic Groups -- §2. Group Closure; Solvable and Nilpotent Groups -- §3. The Lie Algebra of an Algebraic Group -- §4. Jordan Decomposition -- II — Homogeneous Spaces -- §5. Semi-Invariants -- §6. Homogeneous Spaces -- §7. Algebraic Groups in Characteristic Zero -- III Solvable Groups -- §8. Diagonalizable Groups and Tori -- §9. Conjugacy Classes and Centralizers of Semi-Simple Elements -- §10. Connected Solvable Groups -- IV—Borel Subgroups; Reductive Groups -- §11. Borel Subgroups -- §12. Cartan Subgroups; Regular Elements -- §13. The Borel Subgroups Containing a Given Torus -- §14. Root Systems and Bruhat Decomposition in Reductive Groups -- V—Rationality

Questions -- §15. Split Solvable Groups and Subgroups -- §16. Groups over Finite Fields -- §17. Quotient of a Group by a Lie Subalgebra -- §18. Cartan Subgroups over the Groundfield. Unirationality. Splitting of Reductive Groups -- §19. Cartan Subgroups of Solvable Groups -- §20. Isotropic Reductive Groups -- §21. Relative Root System and Bruhat Decomposition for Isotropic Reductive Groups -- §22. Central Isogenies -- §23. Examples -- §24. Survey of Some Other Topics -- A. Classification -- B. Linear Representations -- C. Real Reductive Groups -- References for Chapters I to V -- Index of Definition -- Index of Notation.

Sommario/riassunto

This book is a revised and enlarged edition of "Linear Algebraic Groups", published by W.A. Benjamin in 1969. The text of the first edition has been corrected and revised. Accordingly, this book presents foundational material on algebraic groups, Lie algebras, transformation spaces, and quotient spaces. After establishing these basic topics, the text then turns to solvable groups, general properties of linear algebraic groups and Chevalley's structure theory of reductive groups over algebraically closed groundfields. The remainder of the book is devoted to rationality questions over non-algebraically closed fields. This second edition has been expanded to include material on central isogenies and the structure of the group of rational points of an isotropic reductive group. The main prerequisite is some familiarity with algebraic geometry. The main notions and results needed are summarized in a chapter with references and brief proofs.
