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Autore	Geck Meinolf
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Nota di contenuto	Cover; Contents; 1 Algebraic sets and algebraic groups; 1.1 The Zariski topology on affine space; 1.2 Groebner bases and the Hilbert polynomial; 1.3 Regular maps, direct products, and algebraic groups; 1.4 The tangent space and non-singular points; 1.5 The Lie algebra of a linear algebraic group; 1.6 Groups with a split BN-pair; 1.7 BN-pairs in symplectic and orthogonal groups; 1.8 Bibliographic remarks and exercises; 2 Affine varieties and finite morphisms; 2.1 Hilbert's nullstellensatz and abstract affine varieties; 2.2 Finite morphisms and Chevalley's theorem 2.3 Birational equivalences and normal varieties 2.4 Linearization and generation of algebraic groups; 2.5 Group actions on affine varieties; 2.6 The unipotent variety of the special linear groups; 2.7 Bibliographic remarks and exercises; 3 Algebraic representations and Borel subgroups; 3.1 Algebraic representations, solvable groups, and tori; 3.2 The main theorem of elimination theory; 3.3 Grassmannian

varieties and flag varieties; 3.4 Parabolic subgroups and Borel subgroups; 3.5 On the structure of Borel subgroups; 3.6 Bibliographic remarks and exercises

4 Frobenius maps and finite groups of Lie type 4.1 Frobenius maps and rational structures; 4.2 Frobenius maps and BN-pairs; 4.3 Further applications of the Lang-Steinberg theorem; 4.4 Counting points on varieties over finite fields; 4.5 The virtual characters of Deligne and Lusztig; 4.6 An example: the characters of the Suzuki groups; 4.7 Bibliographic remarks and exercises; Index; A; B; C; D; E; F; G; H; I; J; K; L; M; N; O; P; R; S; T; U; V; W; Z

Sommario/riassunto

An accessible text introducing algebraic geometry and algebraic groups at advanced undergraduate and early graduate level, this book develops the language of algebraic geometry from scratch and uses it to set up the theory of affine algebraic geometries from basic principles.
