

图书基本信息

书名：<<无限维李代数的最高权表示HIGHEST WEIGHT REPRESENTATIONS OF INFINITE DIMENSIONAL LIE ALGEBRA>>

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内容概要

This book is a collection of a series of lectures given by Prof. V Kac at Tata Institute, India in Dec '85 and Jan '86. These lectures focus on the idea of a highest weight representation, which goes through four different incarnations. The first is the canonical commutation relations of the infinite-dimensional Heisenberg Algebra (= oscillator algebra). The second is the highest weight representations of the Lie algebra $gl(\infty)$; of infinite matrices, along with their applications to the theory of soliton equations, discovered by Sato and Date, Jimbo, Kashiwara and Miwa. The third is the unitary highest weight representations of the current (= affine Kac-Moody) algebras. These algebras appear in the lectures twice, in the reduction theory of soliton equations (KP & KdV) and in the Sugawara construction as the main tool in the study of the fourth incarnation of the main idea, the theory of the highest weight representations of the Virasoro algebra. This book should be very useful for both mathematicians and physicists. To mathematicians, it illustrates the interaction of the key ideas of the representation theory of infinite-dimensional Lie algebras; and to physicists, this theory is turning into an important component of such domains of theoretical physics as soliton theory, theory of two-dimensional statistical models, and string theory.

书籍目录

Preface
 Lecture 1 1.1. The Lie algebra d of complex vector fields on the circle 1.2. Representations V_a, b of d
 1.3. Central extensions of d : the Virasoro algebra
 Lecture 2 2.1. Definition of positive-energy representations of Vir 2.2. Oscillator algebra 2.3. Oscillator representations of Vir
 Lecture 3 3.1. Complete reducibility of the oscillator representations of Vir 3.2. Highest weight representations of Vir 3.3. Verma representations $M(c, h)$ and irreducible highest weight representations $V(c, h)$ of Vir 3.4. More (unitary) oscillator representations of Vir
 Lecture 4 4.1. Lie algebras of infinite matrices 4.2. Infinite wedge space F and the Dirac positron theory
 4.3. Representation of GL and g in F . Unitarity of highest weight representations of g . 4.4. Representation of a in F 4.5. Representations of Vir in F
 Lecture 5 5.1. Boson-fermion correspondence 5.2. Wedging and contracting operators 5.3. Vertex operators. The first part of the boson-fermion correspondence 5.4. Vertex representations of g and a
 Lecture 6 6.1. Schur polynomials 6.2. The second part of the boson-fermion correspondence 6.3. An application: structure of the Virasoro representations for $c=1$
 Lecture 7 7.1. Orbit of the vacuum vector under GL 7.2. Defining equations for τ in $F(0)$ 7.3. Differential equations for τ in $C[x_1, x_2, \dots]$
 7.4. Hirota's bilinear equations 7.5. KP hierarchy 7.6. N -soliton solutions
 Lecture 8 8.1. Degenerate representations and the determinant $\det_n(C, h)$ of the contravariant form 8.2. The determinant $\det_n(C, h)$ as a polynomial in h 8.3. The Kac determinant formula 8.4. Some consequences of the determinant formula for unitarity and degeneracy
 Lecture 9 9.1. Representations of loop algebras in F 9.2. Representations of g^n in $F(m)$
 9.3. The invariant bilinear form on g^n . The action of GL_n on g^n 9.4. Reduction from a to a^n and unitarity of highest weight representations of g^n
 Lecture 10 10.1. Nonabelian generalization of Virasoro operators: the Sugawara construction 10.2. The Goddard-Kent-Olive construction
 Lecture 11 11.1. g and its Weyl group 11.2. The Weyl-Kac character formula and Jacobi-Riemann theta functions
 Lecture 12
 References

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