

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.

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