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 3 Determinant Formulas for the Inner Product 4 Field Theory of the Inner Product; 4.1 The A-Functional in Terms of Free Fermions; 4.2 Bosonic Theory and Coulomb Gas; 4.3 The Thermodynamical Limit; 4.4 Coarse-Graining; 4.5 The First Two Orders of the Semi-classical Expansion; 5 Discussion; References; Weak Poisson Structures on Infinite Dimensional Manifolds and Hamiltonian Actions; 1 Introduction; 2 Infinite Dimensional Poisson Manifolds; 2.1 Locally Convex Manifolds; 2.2 Weak Poisson Manifolds; 2.3 Examples of Weak Poisson Manifolds; 2.4 Poisson Maps; 3 Momentum Maps
 3.1 Momentum Maps as Poisson Morphisms

Sommario/riassunto

Traditionally, Lie theory is a tool to build mathematical models for physical systems. Recently, the trend is towards geometrization of the mathematical description of physical systems and objects. A geometric approach to a system yields in general some notion of symmetry which is very helpful in understanding its structure. Geometrization and symmetries are meant in their widest sense, i.e., representation theory, algebraic geometry, infinite-dimensional Lie algebras and groups, superalgebras and supergroups, groups and quantum groups, noncommutative geometry, symmetries of linear and nonlinear PDE, special functions, and others. Furthermore, the necessary tools from functional analysis and number theory are included. This is a big interdisciplinary and interrelated field. Samples of these fresh trends are presented in this volume, based on contributions from the Workshop "Lie Theory and Its Applications in Physics" held near Varna (Bulgaria) in June 2013. This book is suitable for a broad audience of mathematicians, mathematical physicists, and theoretical physicists and researchers in the field of Lie Theory.
