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HELVETICA PHYSICA ACTA

Zusammenfassungen der letzten eingegangenen Arbeiten
Résumés des derniers articles reçus

Conformal Group \rightarrow Schrödinger Group \rightarrow Dynamical Group – The Maximal Kinematical Group of the Massive Schrödinger Particle

by A. O. BARUT

International Centre for Theoretical Physics, Trieste, Italy

(28. III. 73)

Abstract. We determine the 15-parameter non-relativistic limit of the conformal group, equation (11), and its linear realization in the six-dimensional space, equation (22). We show that the *massive* free Schrödinger equation is invariant under a 15-parameter set of transformations enlarging the 12-parameter Schrödinger group, equations (13), (14) and (17). We show how this set arises from the conformal group and determine the quantum-mechanical representation of the generators.

The Scattering Matrix for some Non-Polynomial Interactions I

by SERGIO ALBEVERIO and RAPHAEL HØEGH-KROHN

Institute of Mathematics, University of Oslo, Blindern, Oslo, Norway

(2. IV. 73)

Abstract. We continue the study of quantum field theoretical models in n dimensional space-time with interaction densities which are bounded functions of an ultraviolet cut-off boson field. For the scattering matrix of the space cut-off interaction, constructed in terms of asymptotic fields, we prove analyticity in the coupling constant λ and convergence of the linked cluster expansion for sufficiently small λ . The correlation functions and imaginary time Wightman functions for the infinite volume limit constructed in a previous paper are also proved to have a linked cluster expansion, convergent for sufficiently small values of λ . This is then used, together with the results on the space cut-off S-matrix, to establish the existence and analyticity in λ of the infinite volume scattering functions and to prove reduction formulae for the infinite volume Wightman functions.

The Scattering Matrix for some Non-Polynomial Interactions II

by SERGIO ALBEVERIO and RAPHAEL HØEGH-KROHN

Institute of Mathematics, University of Oslo, Blindern, Oslo, Norway

(2. IV. 73)

Abstract. We continue the study of the infinite volume limit of quantum field theoretical models in n -dimensional space-time with interaction densities which are bounded functions of an ultraviolet cut-off boson field. The truncated off-shell scattering amplitudes are (in contrast to the on-shell ones) the limits of the correspondent space cut-off quantities. They are analytic in the energy variables outside the union of certain real hyperplanes and have the crossing symmetry. Remarks are given on the restriction of the off-shell scattering amplitudes to the physical mass shell.