Zeitschrift: Helvetica Physica Acta

Band: 49 (1976)

Heft: 1

Rubrik: Zusammenfassungen der letzten eingegangenen Arbeiten = Résumés des derniers articles reçus

HELVETICA PHYSICA ACTA
Zusammenfassungen der letzten eingegangenen Arbeiten
Résumés des derniers articles reçus

Angular Momentum Projection in the Two-Center Model by Projection of Hilbert Spaces

by T. H. SELIGMAN and W. ZAHN

Institut für Theoretische Physik der Universität zu Köln, Köln, Germany

(26. IX. 75)

Abstract. The theory of radial canonical transforms is used as a tool for angular momentum projection in quantum-mechanical problems with central interactions. The method is developed for the case where an n-body system is described by two fragments of internal angular momentum zero with oscillator wave functions of arbitrary width, with particular attention to the two-center model. By way of example the applicability of the effective Brink–Boeker nucleon–nucleon interaction for functions with independently varied width parameters is tested. A negative answer results.

Study of Higher Excited States in ^{20}Ne by Inelastic Scattering of 24.5 MeV Protons

by R. DE SWINIARSKI, J. SHERMAN, D. L. HENDRIE, C. GLASHAUSSER and A. D. BACHER

Lawrence Berkeley Laboratory, University of California, Berkeley, California 94720 U.S.A.

(10. X. 75)

Abstract. The angular distributions of the differential cross-sections for the inelastic scattering of 24.5 MeV protons were measured for excited states up to 9.50 MeV in ^{20}Ne. Prior to the experiment, an excitation function was measured for incident proton energies between 23 and 26 MeV to select a resonance-free region. Twenty cross-sections have been measured, generally with high precision and low statistical errors. Large variations have been found in the shapes of angular distributions for states having the same spins and parities. Some of the excited states were analyzed in the framework of the collective model using either vibrational or rotational model wave functions. Very good agreement with the cross-sections of the $K = 0^+$ ground state band have been obtained using β_2, β_4 and β_6 multipole deformations of $+0.47$, $+0.28$ and -0.10, respectively. There is definite evidence for a new state in ^{20}Ne at 9.31 MeV which we tentatively assign as a $J^\pi = 4^+$ state.

Local Gauge Models Predicting their own Superselection Rules

by JEAN-LOUIS BONNARD

Institute de Physique Théorique, Université de Lausanne, Lausanne, Switzerland

and R. F. STREATER

ZIF, Universität Bielefeld, Bielefeld, Germany

(16. X. 75)

Abstract. By considering local SO(2) or U(1) transformations of a two-component Boson field in two-dimensional space-time, we construct certain non-vacuum representations (now called solitons) of the canonical commutation relations. Superselection rules operate between the spaces of these representations.