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

Projective representations of the Schrödinger group

by M. PERROUD

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Abstract. A classification of the projective unitary irreducible representations of the Schrödinger group $S(3)$ is given and a representative of each class is explicitly constructed by the method of induced representations. The connection between some of these representatives and the realizations found by U. Niederer on spaces of wave functions is established. The physical interpretation of these representations is very similar to the case of the Galilei group; however the usefulness of generalizing the concept of elementary systems to these representations is not very clear in view of the appearance of an infinite number of degrees of internal freedom.

Dynamics of the Dicke Laser model II: an example of a semi-classical theory in the presence of focal points

by G. SCHARF

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Abstract. The nature of the time-dependent WKB–Maslov approximation is investigated for the quantum mechanical system which is equivalent to the Dicke Laser model. The local semi-classical solution and its continuation beyond the focal points are discussed.

On the derivation of the Onsager-Casimir reciprocal relations from the principles of thermodynamics

by C. GRUBER

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Abstract. It is shown that for certain discrete systems the Casimir anti-symmetry relations follow from the basic principles of thermodynamics without assuming linear laws and microscopic reversibility.

Unrestricted solution of the Eliashberg equations for Nb

by M. PETER, J. ASHKENAZI and M. DACOROGNA

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Abstract. The Eliashberg equations for superconductivity are solved numerically for Nb using band structure results and experimental phonon spectrum. The solution is done unrestrictedly in the sense that all anisotropy effects as well as the frequency dependence of the gap function are treated correctly. The electron–phonon coupling constants are evaluated in the rigid-ion approximation, and the Coulomb interaction is treated on the same level using typical parameters. The method used requires reasonable computer time which could make it applicable for rather complicated materials. The anisotropy effects on the gap function and T_c are studied with some detail.