atomic scale phenomena in metals. A serious shortcoming of such simulations for cases where heat conduction is important is that when the metal is modeled as a one-component system of nuclei or ions, even where the ion-ion potential includes the effects of electronic screening, the computed thermal conductivity contains only the lattice component. We discuss the range of conditions over which the electronic part of thermal conductivity must be taken into account, and we present results of numerical computations showing how this can be done in some regimes by a suitably modified CMD method.

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DH 2

A New Mathematical Method in Linear Partial Difference Equations.[1] Alain J. Phares, Villanova University, - - The natural connection between Linear Partial Difference Equations (LPDE) and Linear Partial Differential Equations makes it worthwhile developing a general method for obtaining the solution of an LPDE subject to a given set of initial values. The consistency problem between initial values and LPDE's has been solved and the explicit solutions of LPDE's for consistent initial values have been obtained.

1. A.J. Phares, Advances in Computer Methods for Partial Differential Equations, Vol. III, p. 47 (1979); A.J. Phares and R.J. Meier, Jr., Journal of Mathematical Physics, February 1981; A.J. Phares, Journal of Mathematical Physics, February 1981.

DH 3 Reduced Molecular Chaos and Cosmological Turbulence.* J.A. JOHNSON III, Rutgers U. --A use of the Klimontovich formulation has predicted[1] the recently observed reaction distortions in unperturbed bursting nonequilibrium flow at transition to turbulence[2]. This provides a basis for reconsidering the role which thermal fluctuations might play in the condensation of galaxies. For isotropic universes, we find that the requirement of a quasi-static expansion phase can be relaxed. For the case of primeval turbulence, we find that a basis for the origin of elliptical galaxies of low specific angular momentum can be inferred.

* Work supported in part by NASA grant NSG 3280.
[1] J.A. Johnson III and S.C. Chen, Phys. Letts., 68A, 141 (1978)
[2] J.A. Johnson III, W.R. Jones, J. Santiago, J. Phys. D: Appl. Phys., 1413 (1980)

DH 4 Special Relativity From Cosmology. S. C. Barrowes, Illinois State U.--If Newton's laws were our only approach to mechanics we would lack certain insights gained from generalized Legrangian and Hamiltonian coordinates. We understand quantum mechanics better using both the Schroedinger and Heisenberg formulations. Wherever two mathematically equivalent approaches exist the alternate version should be studied and reported for its possible utility or added insights, even if the alternate happens to be an absolute or cosmological approach to special relativity. General relativity, which includes special relativity as a sub-theory, allows cosmologies which include experimentally identifiable local rest frames. Approaching relativity from a cosmologically unmoving frame is therefore allowable and must give equivalent mathematical results. The student may even assign causal significance to cosmological motion without contradicting experiment or introducing any ad hoc concepts. Having a frame with special cosmological status as a home base makes it easier for beginning students to visualize and believe the relativistic effects.

DH 5 The Modified Potential and Hidden Variables, EDWARD R. FLOYD, NAVAL OCEAN SYSTEMS CENTER — The modified potential, U, [J. Math. Phys. 20, 83-85 (1979)] is not unique for bound states. The different modified potentials form different effective Hamilton-Jacobi equations each of which describe different motion. Nevertheless, for a given energy eigenvalue all of the different modified potentials, which form a set of microstates of different motion for the energy eigenvalue, describe the same Schrödinger wavefunction. The set $[U(x_o), U'(x_o); x_o \neq \pm\infty]$ is identified as the set of hidden variables that specifies the particular microstate of the Schrödinger wavefunction. Work is presented for the one-dimensional case only.

DH 6 Bound State Dirac Eigenvalues For Scalar Potentials. B. RAM and M. ARAFH, New Mexico State Univ.-- In an earlier note[1] one of us pointed out, that when the Dirac equation is transformed into an equivalent Schroedinger equation it gives real energy eigenvalues for the quadratic scalar potential. Here we find these eigenvalues for both the linear and quadratic scalar potentials using the WKB method.[2] The values with the linear potential agree well with those obtained by Critchfield[3] by the method of infinite continued fraction.

[1] B. Ram, Lett. Nuovo Çimento 28, 476 (1980).
[2] N. Froman and P.O. Froman, JWKB Approximation (North-Holland, Amsterdam, 1965).
[3] C.L. Critchfield, Phys. Rev. D12 923 (1975)

DH 7 On the Rotating-wave Approximation.

R. RAMIREZ, and M.ORSZAG, Instituto de Fisica, Universid Catolica, Santiago-Chile--- The R.W.A. has been widely used in the last twenty years. In the particular case of Dicke Hamiltonian the R.W.A. leads to a conserved operat $\hat{N} = a^\dagger a + R_3$ (R_3 is the 3rd. component of the angular mo of M atoms and $a^\dagger$ creates photons), which implies the e of a maximum value for the number of photons, n_{max}. For t state $|n_{max}\rangle$ the following relation is satisfied

$$[a,a^\dagger]|n_{max}\rangle = -n_{max}|n_{max}\rangle$$

which clearly violates the Uncertainty Principle.

DH 8 Proposed Accurate Determination of Absolute Velocity of Closed Lab. J. P. WESLEY, U. de los Andes, Bogotá.--By not requiring the rotating mirrors be coupled in Marinov's experiment (Gen. Rel. Grav. 12, 57 (1980)) it is possible to attain large distances D between mirrors and high accuracy. The intensities registered are $I^{\pm} = I_o\cos^2[\omega D/(c \pm v) + \emptyset]$ where ω is the "chopping" frequency ($= 4\pi^2 rN/\lambda$ where r is the radius for the rotating mirror, N rotational frequency, and λ wavelength), v is component of absolute lab velocity along D, and $\emptyset$ is a fixed phase which is arbitrary because mirrors are uncoupled. It is possible to adjust $\emptyset$ so that $I^+ = I_o/2$ which then yields the desired result

$$v = (c^2/4\omega D)\sin^{-1}[(I^- - I^+)/I^+] \quad ,$$

where all quantities on right are readily measureable.

DH 9 OBJECTIVE REASON FOR 1/3rd. REDUCED DETECTION OF SOLAR ELECTRON-NEUTRINOS — S.M. Ayub A-2, Bliss Apartments, 4/1 McNeil Road, Karachi/ PAKISTAN — The oscillation of ν_e flavour into ν_μ, ν_τ