Doppler red shift formula are lower under UR. Thus, distances that are calculated from the red shifts of celestial objects via Hubble's law are lower than previously believed. Also, it is possible for an object traveling with high velocity toward an observer to exhibit a red shift. Thus, rather than simply expanding, the universe may contain a great deal of matter moving in random directions at high relativistic velocities.

GG 8 Concepts of Negative Energy, Annhilation, Fitzgerald Contraction, and Duality Described Classically. RICHARD L. MOORE, US Army ARRADCOM, Dover, NJ.-- The inner structure of lepton matter is consistent with the derivation of the Schroedinger Equation from the Gauss-Hertz prineiple[1] The internal mass and charge densities are gaussian but with different standard deviations. The 'negative' energy of the positron is the result of the assumption that lepton matter will support either compression or extension; stretching is considered negative. Superposition of an electron on a positron results in cancellation of the charge and of the stress leaving the angular momentum and electric current. If one of two cancels, the other adds and gives energy four times the orginal kinetic or magnetic field energy. Thus the superposition results in energy equal to twice the sum of the kinetic and magnetic field energy. Duality is the result of a lepton having particle-like motion as a whole, and an internal wave function, ψ. The Fitzgerald contraction changes the internal (mass and charge distribution. The model gives a theoretical basis to the phenomenological concepts of Akulov[2] and Kinney[3].

[1]R.L. Moore, Found. Phys. 8, 359 (1978)
[2]N.S. Akulov, Sov. Phys. Doki. 23(5), 326, (1978)
[3]J. Kenny, Int. J. of Theo. Phys. 13, 341, 1975.

GG 9 Construction of L^2-Dependent Potentials.* M. A. HOOSHYAR, Shiraz, Univ., Shiraz, Iran.--The problem of constructing nonrelativistic central and L^2-dependent potentials from the information on phase shifts, for scattering of spinless particles by central and L^2-dependent potentials, is considered. The form of the central and L^2-dependent potentials is deduced from a knowledge of the S-matrix as a function of angular momentum at two fixed values of energy. Similar to the case of central potentials, the inverse scattering problem at two fixed values of energy, for central and L^2-dependent potentials has an infinity of solutions, depending on an infinite number of parameters.

* Submitted by F. B. Malik.

GG 10 Quantum Mechanical Models of Computers as Represented by Turing Machines. PAUL BENIOFF, CNRS,CPT II, Marseille* --The models are constructed as follows: Spin projections of a spin system S correspond to the symbols. Each expression E corresponds to a one dimensional lattice of spin systems S in a different state. A head which moves along the lattice is a spinless system with states in $l^2(L-N,N)$. The model includes four spin lattices as a computation tape and three record tapes, two spinless systems as a computation and a recording head, and a fixed spin system S_Q which corresponds to the machine. Spin projections of S_Q correspond to different machine internal states. Control systems move past S_Q and turn on, by a short range potential, record, compute, and shift steps over and over. It is shown that for each number N_1 and each Turing machine Q there exists a Hamiltonian H_Q^N such that for each E there is an initial state $\Psi_{QE}^N(0)$ of the model such that $\Psi_{QE}^N(t) = \exp(-iH_Q^N t)\Psi_{QE}^N(0)$ correctly describes at times $t_1, t_2, \cdots t_N$ model states which correspond to the completion of the 1st, 2nd,$\cdots$,Nth computation steps of Q given E as input.

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GG 11 Some Aspects of the Aharonov-Bohm Effect W. C. HENNEBERGER, Southern Illinois University--Carbondale.--It is shown that the Aharonov-Bohm scattering cross section diverges. This presents a problem since the range of the scattering force (Lorentz force) is finite. The cross section found by Aharonov and Bohm results whether one takes an incident wave function corresponding to particles moving in the incident direction, as was done by AB, or just takes the incident state to be a plane wave. The mechanism by which a localized force results in an infinite cross section is not clear. This is an apparent contradiction to recent proofs that electrodynamics is a local theory.

GG 12 Space-Time Evidence Empirically Fit. J. P. WESLEY, Behmstr.32, 1000 Berlin 65. --First order in v/c light effects (Marinov's measurement of the absolute velocity of closed lab, Sagnac's experiment, Michelson's measurement of earth's velocity, 1st order Doppler effects, Roemer's observations of Jupiter, stellar aberration, and anisotropy of 3^0K background) are explained by 1st order classical absolute space-time theory. Second order in v/c effects (Michelson - Morley experiment, second order Doppler effects, and 2nd order radio astronomy observations) cannot be explained by 2nd order classical theory. An empirical fit of all effects is obtained if in a moving primed system with absolute velocity v in x direction the wave number k' and frequency ω' are given by $c'k'_x = \gamma k(c_x - v)$, $c'k'_y = kc_y$, $\omega'/c' = \gamma\omega/c$, where $c' = c(1 - \underline{c}\cdot\underline{v}/c^2)$ is the phase velocity and $\gamma = (1 - v^2/c^2)^{-1/2}$. The momentum-energy of a photon is $p' = \hbar c'k'/c$, $E' = \hbar\omega'$. These results yield the usual electrodynamics in a moving system and the usual Einstein momentum-energy for a particle of a finite mass.

GG 13 SNEX: Semianalytic Solution of the Linear Transport Equations in One Dimension. B.R. Wienke, Mission Research Corporation.--SNEX is a code which exactly solves the spatial single group, one dimensional(plane,cylinder, sphere) discrete ordinates transport equations with diamond difference angular fluxes. Its purposes are to provide a standard for spatial differencing schemes as well as an exact solution to the transport equations. Full solution is generated by numerically integrating the source terms and adding them to the homogeneous (analytic) solution in the usual fashion. Simple relationships between angular quadratures permit application of the method to plane, cylindrical and spherical geometries. Analysis is confined to isotropic scattering. Simple theory and methodology are presented and discussed. A sample problem is included for comparison.

1. B.R. Wienke, SNEX: Semianalytic Solution of the One-Dimensional Discrete Ordinates(S_n) Transport Equations With Diamond Differenced Angular Fluxes, LASL report LA-7879-MS, Jun (1979).

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GG 14 Difference Schemes and Inversion of the Linear Transport Equation. B.R. Wienke, Mission Research Corporation.--Typically, multigroup discrete ordinates codes solve the transport equations by using finite element or finite difference techniques on compatible meshes. As the meshes are refined, solutions converge to the exact values. An alternative exact approach consists in solving the equations numerically by formal inversion of differential operators. Such procedure generates exact solutions independent of mesh and suggests differencing schemes based on solutions of the homogeneous transport equation. In one dimension