

Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

Quantum formulation of plasma physics AHMAD REZA ESTAKHR,

Researcher — I formulate plasma physics according to postulates of quantum mechanics, base on electron number density. List of Plasma Quantity: $n_e = \frac{dN}{dV}$ electron number density. $j = n_e \cdot u$ electron number current density where the u denotes velocity. $H_v = \frac{j^2}{2n_e} + U_v = E_v$ This is Number Hamiltonian density where the U_v denotes Number potential energy density and E_v denotes Number total energy density. R_m Magnetic Reynolds Number. $k_m = \frac{R_m}{L}$ Magnetic reynolds wave number. ψ_m magnetic wave function. $\zeta = n_e \cdot \eta$ dynamic magnetic diffusivity where the η denotes magnetic diffusivity. Essential Relations: $j = \zeta \cdot k_m = n_e \cdot u$ and then, $\nabla^2 \psi_m + k_m^2 \psi_m = 0$ where the ∇^2 is laplacian operator. $\frac{-\zeta^2 \nabla^2 \psi_m}{(1+\gamma)n_e} + U_v \psi_m = E_v \psi_m$ this is my equation of plasma that appears to be an relativistic expression of schrodinger equation, where the γ denotes lorentz factor and at low speeds $\gamma + 1 = 2$ and so on...etc.

Ahmad Reza Estakhr
Researcher

Date submitted: 13 Jul 2013

Electronic form version 1.4