Some Important Early Physics Formulas, Currently Used, Lack Rotation And Vibration Kinetic Energy Factors Which Must Be Included At This Time To Ensure Formula Accuracy STEWART BREKKE, Northeastern Illinois University — Every form of matter, from elementary particles, atoms and molecules to planets, stars and galaxies, have no motion, linear, rotational and/or vibrational motion singly or in some combination. Some early formulas o not include all of these possibilities. In 1905 Einstein derived the total energy of a mass at slow speeds to be: $E = mc^2 + 1/2mv^2$. However, the total energy must also include the rotation,and vibration kinetic energies and also potential energies. Thus: $E = mc^2 + 1/2mv^2 + 1/2I(\omega)^2 + 1/2kx^2 + Gm_1m_2/r + kq_1q_2/r$. The Photoelectric Effect formula must also be: $hf = (1/2mv^2 + 1/2I(\omega)^2 + 1/2kx^2)max + \phi$. The Virial Theorem must also be: $1/2mv^2 + 1/2I(\omega)^2 + 1/2kx^2 + U = 0$ where U is the gravitational potential energy of the body. The Compton Effect equation should be modified to include the change in rotation and vibration kinetic energy of the particle before and after photon impact: $hc/(\lambda)_1 + (m_0)c^2 + 1/2m(v_1)^2 + 1/2I((\omega)_1)^2 + 1/2k(x_1)^2 = hc/(\lambda)_2 + (m_0)c^2 + + 1/2(m_2)v^2 + 1/2I(\omega)_2)^2$ Many other early created important physics formulas may need to be updated by adding rotation and vibration kinetic energy factors.

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