Total Energy At Low Speeds Relating to Mass Energy Equivalence Must Include Linear, Rotational and Vibrational Kinetic Energies STEWART BREKKE, Northeastern Illinois University(former grad student) — Einstein calculated the total energy at low speeds to be $E_{total} = m_0 c^2 + 1/2 m_0 v^2$. However, the total energy at low speeds must also include the rotational and vibrational kinetic energies as well. Therefore, the mathematical relationship must include these factors. If $1/2 I \omega^2$ is the rotational kinetic energy of the mass, and $1/2 k x_0^2$ is the vibrational kinetic energy of the mass, the total energy of the mass must be $E_{total} = m_0 c^2 + 1/2 m v^2 + 1/2 I \omega^2 + 1/2 k x_0^2$.

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