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Classical Derivation of Planck's Radiation Law FERENC BOZSO, Retired RSM from IBM TJWatson — Inverse scaling between energy and wavelength renders the expression $h{=}E\lambda/c$ constant, and a formal identity. As a mathematical consequence, h is constant for a continuum of energy and associated wavelength values. The $E\lambda/c{=}Const.$ identity entails the possibility that h is expression and universal manifestation of the fact that $E\lambda$ product of energy and spatial interval, as well as $E\Delta\tau$product of energy and temporal interval of photons in four-space are invariants. Assumed to be so, derivation of the spectral radiance of black-body radiation may not be fundamentally conditioned on quantum discontinuity, per se. As apparent vindication of such eventuality, we present a first of a kind derivation of Planck's radiation law, completely within the framework of classical physics, and without need to invoke Planck's quantum of action or quantum discontinuity. An accordingly augmented notion of Planck's constant enables a likewise classical derivation of the quantum Hall impedance, the magnetic flux quantum and the fine structure constant. It is shown that the numerical value of h, the quantum Hall impedance, the magnetic flux quantum and the fine structure constant can be calculated from three fundamental physical quantities; the speed of light, the electron charge, and the wavelength of unit-energy (1eV) photon.

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