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Classical Derivation of Fundamental Physical Constants FERENC BOZSO, Retired — Classical derivation of fundamental constants is presented, in which respective fundamental physical constants are expressed entirely in terms of classical physical quantities. Black-body radiation law, Planck's constant, quantum Hall impedance, magnetic flux quantum, and the fine structure constant are derived based on causal, classical physical principles of quantum electrodynamics. Planck's constant is introduced as invariant product of four-vectors, i.e. as Lorentz-invariant physical quantity. Planck's constant as Lorentz-invariant classical physical quantity permits classical derivation of the other three fundamental constants, and attribution of tangible physical meanings based on classical physical principles. The numerical value of the respective fundamental constants is expressed and calculated entirely with classical physical quantities with accuracies within the uncertainties of their highest accuracy CODATA 2010 listed values.

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