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Autore	Harmuth Henning F
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Nota di contenuto	Contents ; PREFACE ; LIST OF FREQUENTLY USED SYMBOLS ; 1 Introduction ; 1.1 Maxwell's Equations ; 1.2 Step Function Excitation of Planar TEM Wave ; 1.3 Solutions for the Electric Field Strength ; 1.4 Associated Magnetic Field Strength 1.5 Field Strengths with Continuous Time Variation 1.6 Modified Maxwell Equations in Potential Form ; 2 Monopole Dipole and Multipole Currents ; 2.1 Electric Monopoles and Dipoles With Constant Mass ; 2.2 Magnetic Monopoles and Dipoles With Constant Mass 2.3 Monopoles and Dipoles With Relativistic Variable Mass 2.4 Covariance of the Modified Maxwell Equations ; 2.5 Energy and Momentum With Dipole Current Correction ; 3 Hamiltonian Formalism ; 3.1 Undefined Potentials and Divergent Integrals 3.2 Charged Particle in an Electromagnetic Field 3.3 Variability of the Mass of a Charged Particle ; 3.4 Steady State Solutions of the Modified Maxwell Equations ; 3.5 Steady State Quantization of the Modified Radiation Field

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	4.1 Radiation Field in Extended Lorentz Gauge	
	4.2 Simplification of $A_{\nu}(C, 0)$ and $A_{\mu\nu}(C, 0)$	
	; 4.3 Hamilton Function for Planar Wave	;
	4.4 Quantization of a Planar Wave	; 4.5
	Exponential Ramp Function Excitation	;
	4.6 Excitation With Rectangular Pulse	
	5 Klein-Gordon Equation and Vacuum Constants	

Sommario/riassunto

Divergencies in quantum field theory referred to as "infinite zero-point energy" have been a problem for 70 years. Renormalization has always been considered an unsatisfactory remedy. In 1985 it was found that Maxwell's equations generally do not have solutions that satisfy the causality law. An additional term for magnetic dipole currents corrected this shortcoming. Rotating magnetic dipoles produce magnetic dipole currents, just as rotating electric dipoles in a material like barium titanate produce electric dipole currents. Electric dipole currents were always part of Maxwell's equations.
