CONTENTS

| PREF | ACE | | | | | | |
|---------------------|---|--|--|--|--|--|--|
| FUTURE CONTRIBUTION | | | | | | | |
| DED | DEDICATION | | | | | | |
| Fori | FOREWORD | | | | | | |
| List | OF FREQUENTLY USED SYMBOLS xi | | | | | | |
| | | | | | | | |
| | 1 Introduction | | | | | | |
| | 1 Introduction | | | | | | |
| 1.1 | Modified Maxwell Equations | | | | | | |
| 1.2 | Summary of Results in Classical Physics | | | | | | |
| 1.3 | Basic Relations for Quantum Mechanics | | | | | | |
| 1.4 | Dipole Currents | | | | | | |
| 1.5 | Infinitesimal and Finite Differences for Space and Time | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | 2 Differential Equations for the Pure Radiation Field | | | | | | |
| 2.1 | Pure Radiation Field | | | | | | |
| 2.2 | Differential Solution for $w(\zeta,\theta)$ | | | | | | |
| 2.3 | Hamilton Function for Planar Wave | | | | | | |
| 2.4 | Quantization of the Differential Solution | | | | | | |
| 2.5 | Computer Plots for the Differential Theory | | | | | | |
| 2.5 | Compared 1000 for the Bitterential 1100 for the Compared 1000 for the Bitterential 1100 for the | | | | | | |

vi CONTENTS

| | 3 Difference Equations for the Pure Radiation Field |
|---------------------------------|---|
| 3.1 | Basic Difference Equations |
| 3.2 | Time Dependent Solution of $V_{\rm e}(\zeta,\theta)$ |
| 3.3 | Solution for $A_{\mathrm{ev}}(\zeta,\theta)$ |
| 3.4 | Magnetic Potential $A_{ m mv}(\zeta, 	heta)$ |
| 3.5 | Hamilton Function for Finite Differences |
| 3.6 | Quantization of the Difference Solution |
| 3.7 | Computer Plots for the Difference Theory |
| | 4 Differential Equation for the Klein-Gordon Field |
| 4.1 | Klein-Gordon Equation with Magnetic Current Density |
| 4.2 | Step Function Excitation |
| 4.3 | Exponential Ramp Function Excitation |
| 4.4 | Hamilton Function and Quantization |
| 4.5 | Plots for the Differential Theory |
| 5.1 5.2 5.3 5.4 5.5 | |
| 3.3 | 6 Appendix |
| 6.1 | Calculations for Section 2.2 |
| 6.2 | Inhomogeneous Difference Wave Equation |
| 6.3 | Differential Derivation of $A_{\rm ev}(\zeta,\theta)$ |
| 6.4 | Calculations for Section 3.3 |
| 6.5 | Calculations for Section 3.4 |
| 6.6 | Calculations for Section 3.5 |
| 6.7 | Calculations for Section 4.4 |
| 6.8 | Calculations for Section 5.4 |
| Refe Inde | rences and Bibliography |