

# Electromagnetic Fields 2nd Edition

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## **INTRODUCTION TO ELECTROMAGNETISM**

- MARTIN J N SIBLEY 2021-03-24

THIS EDITION AIMS TO EXPAND ON THE FIRST EDITION AND TAKE THE READER THROUGH TO THE WAVE EQUATION ON COAXIAL CABLE AND FREE-SPACE BY USING MAXWELL'S EQUATIONS. THE NEW CHAPTERS INCLUDE TIME VARYING SIGNALS AND FUNDAMENTALS OF MAXWELL'S EQUATIONS. THIS BOOK WILL INTRODUCE AND DISCUSS ELECTROMAGNETIC FIELDS IN AN ACCESSIBLE MANNER. THE AUTHOR EXPLAINS ELECTROCONDUCTIVE FIELDS AND DEVELOPS IDEAS RELATING TO SIGNAL PROPAGATION AND DEVELOPS MAXWELL'S EQUATIONS AND APPLIES

THEM TO PROPAGATION IN A PLANAR OPTICAL WAVEGUIDE. THE FIRST OF THE NEW CHAPTERS INTRODUCES THE IDEA OF A TRAVELLING WAVE BY CONSIDERING THE VARIATION OF VOLTAGE ALONG A COAXIAL LINE. THIS CONCEPT WILL BE USED IN THE SECOND NEW CHAPTER WHICH SOLVES MAXWELL'S EQUATIONS IN FREE-SPACE AND THEN APPLIES THEM TO A PLANAR OPTICAL WAVEGUIDE IN THE THIRD NEW CHAPTER. AS THIS IS AN AREA THAT MOST STUDENTS FIND DIFFICULT, IT LINKS BACK TO THE EARLIER CHAPTERS TO AID UNDERSTANDING. THIS BOOK IS INTENDED FOR FIRST- AND SECOND-YEAR ELECTRICAL AND ELECTRONIC

UNDERGRADUATES AND CAN ALSO BE USED FOR UNDERGRADUATES IN MECHANICAL ENGINEERING, COMPUTING AND PHYSICS. THE BOOK INCLUDES EXAMPLES AND HOMEWORK PROBLEMS. INTRODUCES AND EXAMINES ELECTROSTATIC FIELDS IN AN ACCESSIBLE MANNER EXPLAINS ELECTROCONDUCTIVE FIELDS DEVELOPS IDEAS RELATING TO SIGNAL PROPAGATION EXAMINES MAXWELL'S EQUATIONS AND RELATES THEM TO PROPAGATION IN A PLANAR OPTICAL WAVEGUIDE MARTIN SIBLEY RECENTLY RETIRED AFTER 33 YEARS OF TEACHING AT THE UNIVERSITY OF HUDDERSFIELD. HE HAS A PHD FROM HUDDERSFIELD POLYTECHNIC IN PREAMPLIFIER DESIGN FOR OPTICAL RECEIVERS. HE STARTED HIS CAREER IN ACADEMIA IN 1986 HAVING SPENT 3 YEARS AS A POSTGRADUATE STUDENT AND THEN 2 YEARS AS A BRITISH TELECOM-FUNDED RESEARCH FELLOW. HIS RESEARCH WORK HAD A STRONG BIAS TO THE PRACTICAL IMPLEMENTATION OF RESEARCH, AND HE TAUGHT ELECTROMAGNETISM AND COMMUNICATIONS AT ALL LEVELS SINCE 1986. DR. SIBLEY FINISHED HIS ACADEMIC CAREER AS A READER IN COMMUNICATIONS, SCHOOL OF COMPUTING AND ENGINEERING, UNIVERSITY OF HUDDERSFIELD. HE HAS AUTHORED FIVE BOOKS AND PUBLISHED OVER 80 RESEARCH PAPERS.

*ELECTROMAGNETIC FIELDS AND WAVES*  
- MAGDY F. ISKANDER 1992

PRESENTS COMPREHENSIVE COVERAGE OF THE FUNDAMENTALS OF ELECTROMAGNETIC THEORY AND

APPLICATIONS. BASIC LAWS AND PHYSICAL PHENOMENA ARE ILLUSTRATED BY NUMEROUS EXAMPLES.

**ELECTROMAGNETIC FIELDS AND WAVES**  
- MAGDY F. ISKANDER 2013

THE LATEST EDITION OF ELECTROMAGNETIC FIELDS AND WAVES RETAINS AN AUTHORITATIVE, BALANCED APPROACH, IN-DEPTH COVERAGE, EXTENSIVE ANALYSIS, AND USE OF COMPUTATIONAL TECHNIQUES TO PROVIDE A COMPLETE UNDERSTANDING OF ELECTROMAGNETIC IMPORTANT TO ALL ELECTRICAL ENGINEERING STUDENTS. AN ESSENTIAL FEATURE OF THIS INNOVATIVE TEXT IS THE EARLY INTRODUCTION OF MAXWELL'S EQUATIONS, TOGETHER WITH THE QUANTIFYING EXPERIMENTAL OBSERVATIONS MADE BY THE PIONEERS WHO DISCOVERED ELECTROMAGNETICS. THIS APPROACH DIRECTLY LINKS THE MATHEMATICAL RELATIONS IN MAXWELL'S EQUATIONS TO REAL EXPERIMENTS AND FACILITATES A FUNDAMENTAL UNDERSTANDING OF WAVE PROPAGATION AND USE IN MODERN PRACTICAL APPLICATIONS, ESPECIALLY IN TODAY'S WIRELESS WORLD. NEW AND EXPANDED TOPICS INCLUDE THE CONCEPTUAL RELATIONSHIP BETWEEN COULOMB'S LAW AND GAUSS'S LAW FOR CALCULATING ELECTRIC FIELDS, THE RELATIONSHIP BETWEEN BIOT-SAVART'S AND AMPERE'S LAWS AND THEIR USE IN CALCULATING MAGNETIC FIELDS FROM CURRENT SOURCES, THE DEVELOPMENT OF FARADAY'S LAW FROM EXPERIMENTAL OBSERVATIONS,

AND A COMPREHENSIVE DISCUSSION AND ANALYSIS OF THE DISPLACEMENT CURRENT TERM THAT UNIFIED THE LAWS OF ELECTROMAGNETISM. THE TEXT ALSO INCLUDES SECTIONS ON COMPUTATIONAL TECHNIQUES IN ELECTROMAGNETICS AND APPLICATIONS IN ELECTROSTATICS, IN TRANSMISSION LINES, AND IN WIRE ANTENNA DESIGNS. THE ANTENNAS CHAPTER HAS BEEN SUBSTANTIALLY BROADENED IN SCOPE; IT NOW CAN BE USED AS A STAND-ALONE TEXT IN AN INTRODUCTORY ANTENNAS COURSE. ADVANTAGEOUS PEDAGOGICAL FEATURES APPEAR IN EVERY CHAPTER: EXAMPLES THAT ILLUSTRATE KEY TOPICS AND ASK THE READER TO RENDER A SOLUTION TO A QUESTION OR PROBLEM POSED; AN ABUNDANT NUMBER OF DETAILED FIGURES AND DIAGRAMS, ENABLING A VISUAL INTERPRETATION OF THE DEVELOPED MATHEMATICAL EQUATIONS; AND MULTIPLE REVIEW QUESTIONS AND PROBLEMS DESIGNED TO STRENGTHEN AND ACCELERATE THE LEARNING PROCESS. HELPFUL MATERIAL IS INCLUDED IN SIX APPENDICES, INCLUDING ANSWERS TO SELECTED PROBLEMS. UNLIKE OTHER INTRODUCTORY TEXTS, **ELECTROMAGNETIC FIELDS AND WAVES** DOES NOT BOG READERS DOWN WITH EQUATIONS AND MATHEMATICAL RELATIONS. INSTEAD, IT FOCUSES ON THE FUNDAMENTAL UNDERSTANDING AND EXCITING APPLICATIONS OF ELECTROMAGNETICS. NOT-FOR-SALE INSTRUCTOR RESOURCE MATERIAL AVAILABLE TO COLLEGE AND

UNIVERSITY FACULTY ONLY; CONTACT PUBLISHER DIRECTLY. [RESUMEN DEL EDITOR].

**ELECTROMAGNETIC FIELDS AND WAVES**  
- PAUL LORRAIN 1984

**ELECTROMAGNETIC FIELDS** - JEAN VAN  
BLADEL 1975

ELECTROMAGNETIC FIELD THEORY  
FUNDAMENTALS - BHAG SINGH GURU  
2009-07-23

GURU AND HIZIROGLU HAVE PRODUCED AN ACCESSIBLE AND USER-FRIENDLY TEXT ON ELECTROMAGNETICS THAT WILL APPEAL TO BOTH STUDENTS AND PROFESSORS TEACHING THIS COURSE. THIS LIVELY BOOK INCLUDES MANY WORKED EXAMPLES AND PROBLEMS IN EVERY CHAPTER, AS WELL AS CHAPTER SUMMARIES AND BACKGROUND REVISION MATERIAL WHERE APPROPRIATE. THE BOOK INTRODUCES UNDERGRADUATE STUDENTS TO THE BASIC CONCEPTS OF ELECTROSTATIC AND MAGNETOSTATIC FIELDS, BEFORE MOVING ON TO COVER MAXWELL'S EQUATIONS, PROPAGATION, TRANSMISSION AND RADIATION. CHAPTERS ON THE FINITE ELEMENT AND FINITE DIFFERENCE METHOD, AND A DETAILED APPENDIX ON THE SMITH CHART ARE ADDITIONAL ENHANCEMENTS. MATHCAD CODE FOR MANY EXAMPLES IN THE BOOK AND A COMPREHENSIVE SOLUTIONS SET ARE AVAILABLE AT [WWW.CAMBRIDGE.ORG/9780521830164](http://WWW.CAMBRIDGE.ORG/9780521830164).

ELECTROMAGNETIC FIELDS - J. VAN  
BLADEL 1975

CAUSALITY, ELECTROMAGNETIC INDUCTION, AND GRAVITATION - OLEG D. JEFIMENKO 2000

**FIELD AND WAVE ELECTROMAGNETICS** - DAVID K. CHENG 2013-07-23  
RESPECTED FOR ITS ACCURACY, ITS SMOOTH AND LOGICAL FLOW OF IDEAS, AND ITS CLEAR PRESENTATION, 'FIELD AND WAVE ELECTROMAGNETICS' HAS BECOME AN ESTABLISHED TEXTBOOK IN THE FIELD OF ELECTROMAGNETICS. THIS BOOK BUILDS THE ELECTROMAGNETIC MODEL USING AN AXIOMATIC APPROACH IN STEPS: FIRST FOR STATIC ELECTRIC FIELDS, THEN FOR STATIC MAGNETIC FIELDS, AND FINALLY FOR TIME-VARYING FIELDS LEADING TO MAXWELL'S EQUATIONS.

ELECTROMAGNETIC COMPATIBILITY - DAVID WESTON 2017-12-19  
THIS TOTALLY REVISED AND EXPANDED REFERENCE/TEXT PROVIDES COMPREHENSIVE, SINGLE-SOURCE COVERAGE OF THE DESIGN, PROBLEM SOLVING, AND SPECIFICATIONS OF ELECTROMAGNETIC COMPATIBILITY (EMC) INTO ELECTRICAL EQUIPMENT/SYSTEMS-INCLUDING NEW INFORMATION ON BASIC THEORIES, APPLICATIONS, EVALUATIONS, PREDICTION TECHNIQUES, AND PRACTICAL DIAGNOSTIC OPTIONS FOR PREVENTING EMI THROUGH COST-EFFECTIVE SOLUTIONS. OFFERS THE MOST RECENT GUIDELINES, SAFETY LIMITS, AND STANDARDS FOR HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS! CONTAINING UPDATED DATA ON EMI DIAGNOSTIC VERIFICATION

MEASUREMENTS, AS WELL AS OVER 900 DRAWINGS, PHOTOGRAPHS, TABLES, AND EQUATIONS-500 MORE THAN THE PREVIOUS EDITION-  
**ELECTROMAGNETIC COMPATIBILITY: PRINCIPLES AND APPLICATIONS**, SECOND EDITION:  
**ENGINEERING ELECTROMAGNETIC FIELDS AND WAVES** - CARL THEODORE ADOLF JOHNK 1975

**ELECTROMAGNETIC FIELDS** - ROALD K. WANGSNES 1986-07-24  
THIS REVISED EDITION PROVIDES PATIENT GUIDANCE IN ITS CLEAR AND ORGANIZED PRESENTATION OF PROBLEMS. IT IS RICH IN VARIETY, LARGE IN NUMBER AND PROVIDES VERY CAREFUL TREATMENT OF RELATIVITY. ONE OUTSTANDING FEATURE IS THE INCLUSION OF SIMPLE, STANDARD EXAMPLES DEMONSTRATED IN DIFFERENT METHODS THAT WILL ALLOW STUDENTS TO ENHANCE AND UNDERSTAND THEIR CALCULATING ABILITIES. THERE ARE OVER 145 WORKED EXAMPLES; VIRTUALLY ALL OF THE STANDARD PROBLEMS ARE INCLUDED.

ELECTRICITY AND MAGNETISM - OLEG D. JEFIMENKO 1989

*ELECTROMAGNETIC WAVE PROPAGATION, RADIATION, AND SCATTERING* - AKIRA ISHIMARU 2017-08-09  
ONE OF THE MOST METHODICAL TREATMENTS OF ELECTROMAGNETIC WAVE PROPAGATION, RADIATION, AND SCATTERING—INCLUDING NEW

APPLICATIONS AND IDEAS PRESENTED IN TWO PARTS, THIS BOOK TAKES AN ANALYTICAL APPROACH ON THE SUBJECT AND EMPHASIZES NEW IDEAS AND APPLICATIONS USED TODAY. PART ONE COVERS FUNDAMENTALS OF ELECTROMAGNETIC WAVE PROPAGATION, RADIATION, AND SCATTERING. IT PROVIDES AMPLE END-OF-CHAPTER PROBLEMS AND OFFERS A 90-PAGE SOLUTION MANUAL TO HELP READERS CHECK AND COMPREHEND THEIR WORK. THE SECOND PART OF THE BOOK EXPLORES UP-TO-DATE APPLICATIONS OF ELECTROMAGNETIC WAVES—INCLUDING RADIOMETRY, GEOPHYSICAL REMOTE SENSING AND IMAGING, AND BIOMEDICAL AND SIGNAL PROCESSING APPLICATIONS. WRITTEN BY A WORLD RENOWNED AUTHORITY IN THE FIELD OF ELECTROMAGNETIC RESEARCH, THIS NEW EDITION OF ELECTROMAGNETIC WAVE PROPAGATION, RADIATION, AND SCATTERING: FROM FUNDAMENTALS TO APPLICATIONS PRESENTS DETAILED APPLICATIONS WITH USEFUL APPENDICES, INCLUDING MATHEMATICAL FORMULAS, AIRY FUNCTION, ABEL'S EQUATION, HILBERT TRANSFORM, AND RIEMANN SURFACES. THE BOOK ALSO FEATURES NEWLY REVISED MATERIAL THAT FOCUSES ON THE FOLLOWING TOPICS: STATISTICAL WAVE THEORIES—WHICH HAVE BEEN EXTENSIVELY APPLIED TO TOPICS SUCH AS GEOPHYSICAL REMOTE SENSING, BIO-ELECTROMAGNETICS, BIO-OPTICS, AND BIO-ULTRASOUND IMAGING INTEGRATION OF SEVERAL DISTINCT YET RELATED

DISCIPLINES, SUCH AS STATISTICAL WAVE THEORIES, COMMUNICATIONS, SIGNAL PROCESSING, AND TIME REVERSAL IMAGING NEW PHENOMENA OF MULTIPLE SCATTERING, SUCH AS COHERENT SCATTERING AND MEMORY EFFECTS MULTIPHYSICS APPLICATIONS THAT COMBINE THEORIES FOR DIFFERENT PHYSICAL PHENOMENA, SUCH AS SEISMIC CODA WAVES, STOCHASTIC WAVE THEORY, HEAT DIFFUSION, AND TEMPERATURE RISE IN BIOLOGICAL AND OTHER MEDIA METAMATERIALS AND SOLITONS IN OPTICAL FIBERS, NONLINEAR PHENOMENA, AND POROUS MEDIA PRIMARILY A TEXTBOOK FOR GRADUATE COURSES IN ELECTRICAL ENGINEERING, ELECTROMAGNETIC WAVE PROPAGATION, RADIATION, AND SCATTERING IS ALSO IDEAL FOR GRADUATE STUDENTS IN BIOENGINEERING, GEOPHYSICS, OCEAN ENGINEERING, AND GEOPHYSICAL REMOTE SENSING. THE BOOK IS ALSO A USEFUL REFERENCE FOR ENGINEERS AND SCIENTISTS WORKING IN FIELDS SUCH AS GEOPHYSICAL REMOTE SENSING, BIO-MEDICAL ENGINEERING IN OPTICS AND ULTRASOUND, AND NEW MATERIALS AND INTEGRATION WITH SIGNAL PROCESSING. **ELECTROMAGNETIC FIELDS** - JEAN G. VAN BLADEL 2007-06-04 PROFESSOR JEAN VAN BLADEL, AN EMINENT RESEARCHER AND EDUCATOR IN FUNDAMENTAL ELECTROMAGNETIC THEORY AND ITS APPLICATION IN ELECTRICAL ENGINEERING, HAS UPDATED AND EXPANDED HIS DEFINITIVE TEXT AND REFERENCE ON ELECTROMAGNETIC FIELDS TO TWICE ITS ORIGINAL CONTENT. THIS

NEW EDITION INCORPORATES THE LATEST METHODS, THEORY, FORMULATIONS, AND APPLICATIONS THAT RELATE TO TODAY'S TECHNOLOGIES. WITH AN EMPHASIS ON BASIC PRINCIPLES AND A FOCUS ON ELECTROMAGNETIC FORMULATION AND ANALYSIS, ELECTROMAGNETIC FIELDS, SECOND EDITION INCLUDES DETAILED DISCUSSIONS OF ELECTROSTATIC FIELDS, POTENTIAL THEORY, PROPAGATION IN WAVEGUIDES AND UNBOUNDED SPACE, SCATTERING BY OBSTACLES, PENETRATION THROUGH APERTURES, AND FIELD BEHAVIOR AT HIGH AND LOW FREQUENCIES.

**HANDBOOK OF BIOLOGICAL EFFECTS OF ELECTROMAGNETIC FIELDS, THIRD EDITION - 2 VOLUME SET** - CHARLES POLK 1995-12-21

THE FIRST EDITION OF THIS BOOK HAS BEEN RECOGNIZED AS THE STANDARD REFERENCE ON BIOLOGICAL EFFECTS OF ELECTRIC AND MAGNETIC FIELDS FROM DC TO MICROWAVES. BUT MUCH HAS CHANGED IN THIS SCIENCE SINCE THE BOOK'S ORIGINAL PUBLICATION IN 1986. WITH CONTRIBUTIONS FROM EIGHTEEN LEADING RESEARCHERS, THIS LATEST EDITION INCLUDES AUTHORITATIVE DISCUSSIONS OF MANY NEW DEVELOPMENTS AND WILL QUICKLY BECOME THE NEW, MUST-HAVE RESOURCE HANDBOOK. DIELECTRIC PROPERTIES OF BIOLOGICAL TISSUE ARE THOROUGHLY EXAMINED, FOLLOWED BY CHAPTERS ON PHYSICAL MECHANISMS AND BIOLOGICAL EFFECTS OF STATIC AND EXTREMELY LOW FREQUENCY MAGNETIC FIELDS. NEW CHAPTERS ON

TOPICS THAT WERE TREATED VERY BRIEFLY IN THE FIRST EDITION NOW RECEIVE EXTENSIVE TREATMENT. THESE TOPICS INCLUDE ELECTRIC AND MAGNETIC FIELDS FOR BONE AND SOFT TISSUE REPAIR, ELECTROPORATION, AND EPIDEMIOLOGY OF ELF HEALTH EFFECTS. THE CHAPTER ON COMPUTER METHODS FOR PREDICTING FIELD INTENSITY HAS BEEN SUBSTANTIALLY REVISED TO DESCRIBE NEW NUMERICAL TECHNIQUES DEVELOPED WITHIN THE LAST FEW YEARS AND INCLUDES CALCULATIONS OF POWER ABSORBED IN THE HUMAN HEAD FROM CELLULAR TELEPHONES. THE CHAPTER DISCUSSING EXPERIMENTAL RESULTS ON RF INTERACTION WITH LIVING MATTER NOW CONTAINS INFORMATION ON EFFECTS OF VERY HIGH POWER, VERY SHORT DURATION PULSES. A NEW APPENDIX ON SAFETY STANDARDS IS BASED ON THE LATEST PUBLICATIONS OF GOVERNMENTAL, AS WELL AS QUASI-GOVERNMENTAL ORGANIZATIONS (SUCH AS THE U.S. COUNCIL ON RADIATION PROTECTION) IN THE UNITED STATES, EUROPE, AND AUSTRALIA. WITH ALL ITS REVISIONS, THIS UPDATED VERSION OF THE CRC HANDBOOK OF BIOLOGICAL EFFECTS OF ELECTROMAGNETIC FIELDS PROVIDES THE MOST COMPREHENSIVE OVERVIEW AVAILABLE OF THIS RAPIDLY CHANGING SCIENCE.

NUMERICAL METHODS FOR ENGINEERING - KARL F. WARNICK 2020-09-26  
THE REVISED AND UPDATED SECOND EDITION OF THIS TEXTBOOK TEACHES STUDENTS TO CREATE COMPUTER CODES USED TO ENGINEER ANTENNAS,

MICROWAVE CIRCUITS, AND OTHER CRITICAL TECHNOLOGIES FOR WIRELESS COMMUNICATIONS AND OTHER APPLICATIONS OF ELECTROMAGNETIC FIELDS AND WAVES. WORKED CODE EXAMPLES ARE PROVIDED FOR MATLAB TECHNICAL COMPUTING SOFTWARE.

**THEORY AND COMPUTATION OF ELECTROMAGNETIC FIELDS** - JIAN-MING JIN 2015-09-15

REVIEWS THE FUNDAMENTAL CONCEPTS BEHIND THE THEORY AND COMPUTATION OF ELECTROMAGNETIC FIELDS THE BOOK IS DIVIDED IN TWO PARTS. THE FIRST PART COVERS BOTH FUNDAMENTAL THEORIES (SUCH AS VECTOR ANALYSIS, MAXWELL'S EQUATIONS, BOUNDARY CONDITION, AND TRANSMISSION LINE THEORY) AND ADVANCED TOPICS (SUCH AS WAVE TRANSFORMATION, ADDITION THEOREMS, AND FIELDS IN LAYERED MEDIA) IN ORDER TO BENEFIT STUDENTS AT ALL LEVELS. THE SECOND PART OF THE BOOK COVERS THE MAJOR COMPUTATIONAL METHODS FOR NUMERICAL ANALYSIS OF ELECTROMAGNETIC FIELDS FOR ENGINEERING APPLICATIONS. THESE METHODS INCLUDE THE THREE FUNDAMENTAL APPROACHES FOR NUMERICAL ANALYSIS OF ELECTROMAGNETIC FIELDS: THE FINITE DIFFERENCE METHOD (THE FINITE DIFFERENCE TIME-DOMAIN METHOD IN PARTICULAR), THE FINITE ELEMENT METHOD, AND THE INTEGRAL EQUATION-BASED MOMENT METHOD. THE SECOND PART ALSO EXAMINES FAST ALGORITHMS FOR SOLVING INTEGRAL

EQUATIONS AND HYBRID TECHNIQUES THAT COMBINE DIFFERENT NUMERICAL METHODS TO SEEK MORE EFFICIENT SOLUTIONS OF COMPLICATED ELECTROMAGNETIC PROBLEMS. THEORY AND COMPUTATION OF ELECTROMAGNETIC FIELDS, SECOND EDITION: PROVIDES THE FOUNDATION NECESSARY FOR GRADUATE STUDENTS TO LEARN AND UNDERSTAND MORE ADVANCED TOPICS DISCUSSES ELECTROMAGNETIC ANALYSIS IN RECTANGULAR, CYLINDRICAL AND SPHERICAL COORDINATES COVERS COMPUTATIONAL ELECTROMAGNETICS IN BOTH FREQUENCY AND TIME DOMAINS INCLUDES NEW AND UPDATED HOMEWORK PROBLEMS AND EXAMPLES THEORY AND COMPUTATION OF ELECTROMAGNETIC FIELDS, SECOND EDITION IS WRITTEN FOR ADVANCED UNDERGRADUATE AND GRADUATE LEVEL ELECTRICAL ENGINEERING STUDENTS. THIS BOOK CAN ALSO BE USED AS A REFERENCE FOR PROFESSIONAL ENGINEERS INTERESTED IN LEARNING ABOUT ANALYSIS AND COMPUTATION SKILLS.

**ELECTROMAGNETIC ANISOTROPY AND BIANISOTROPY: A FIELD GUIDE (SECOND EDITION)** - MACKAY TOM G 2019-04-25

THE AIM OF THIS BOOK IS TO EXTEND AND UPDATE THE STANDARD TREATMENTS OF CRYSTAL OPTICS FOUND IN CLASSICAL TEXTBOOKS. IT PROVIDES A BROAD OVERVIEW OF ELECTROMAGNETIC ANISOTROPY, BIANISOTROPY, AND CHIRALITY. THE TOPICS COVERED ARE CONSTITUTIVE RELATIONS (CHAPTER 1); EXAMPLES OF

ANISOTROPY, BIANISOTROPY, AND CHIRALITY (CHAPTER 2); SPACETIME SYMMETRIES (CHAPTER 3); PLANEWAVE PROPAGATION (CHAPTER 4); DYADIC GREEN FUNCTIONS INCLUDING DEPOLARIZATION DYADICS (CHAPTER 5); HOMOGENIZATION FORMALISMS (CHAPTER 6); NONLINEAR ASPECTS (CHAPTER 7); SURFACE WAVES (CHAPTER 8) AND TOPOLOGICAL INSULATORS (CHAPTER 9). NEW ADDITIONS IN THIS SECOND EDITION ARE: CHAPTERS 8 AND 9, EXPANDED TREATMENTS OF ACTIVE MEDIUMS IN CHAPTER 4, AND THE HUYGENS PRINCIPLE AND THE EWALD-OSEEN EXTINCTION THEOREM IN CHAPTER 5.

THIS BOOK IS PERFECT FOR POSTBACCALAUREATE STUDENTS AND RESEARCHERS SEEKING AN INTRODUCTORY SURVEY OF THE ELECTROMAGNETIC THEORY OF COMPLEX MEDIUMS.

ENGINEERING ELECTROMAGNETIC FIELDS AND WAVES - CARL T. A. JOHNK  
1991-01-16

PRESENTS THE INTRODUCTORY THEORY AND APPLICATIONS OF MAXWELL'S EQUATIONS TO ELECTROMAGNETIC FIELD PROBLEMS. UNLIKE OTHER TEXTS, MAXWELL'S EQUATIONS AND THE ASSOCIATED VECTOR MATHEMATICS ARE DEVELOPED EARLY IN THE WORK, ALLOWING READERS TO APPLY THEM AT THE OUTSET. ITS UNIFIED TREATMENT OF COORDINATE SYSTEMS SAVES TIME IN DEVELOPING THE RULES FOR VECTOR MANIPULATIONS IN WAYS OTHER THAN THE RECTANGULAR COORDINATE SYSTEM. THE FOLLOWING CHAPTERS

COVER STATIC AND QUASI-STATIC ELECTRIC AND MAGNETIC FIELDS, WAVE REFLECTION AND TRANSMISSION AT PLANE BOUNDARIES, THE POYNTING POWER THEOREM, RECTANGULAR WAVEGUIDE MODE THEORY, TRANSMISSION LINES, AND AN INTRODUCTION TO THE PROPERTIES OF LINEAR ANTENNAS AND APERTURE ANTENNAS. INCLUDES AN EXPANDED SET OF PROBLEMS, MANY OF WHICH EXTEND THE MATERIAL DEVELOPED IN THE CHAPTERS.

**FIELD AND WAVE ELECTROMAGNETICS** - DAVID KEUN CHENG 1989

FIELD AND WAVE ELECTROMAGNETICS (WORLD STUDENT S.)

*ELECTRICITY AND MAGNETISM* -

EDWARD M. PURCELL 2013-01-21  
FOR 50 YEARS, EDWARD M. PURCELL'S CLASSIC TEXTBOOK HAS INTRODUCED STUDENTS TO THE WORLD OF ELECTRICITY AND MAGNETISM. THE THIRD EDITION HAS BEEN BROUGHT UP TO DATE AND IS NOW IN SI UNITS. IT FEATURES HUNDREDS OF NEW EXAMPLES, PROBLEMS, AND FIGURES, AND CONTAINS DISCUSSIONS OF REAL-LIFE APPLICATIONS. THE TEXTBOOK COVERS ALL THE STANDARD INTRODUCTORY TOPICS, SUCH AS ELECTROSTATICS, MAGNETISM, CIRCUITS, ELECTROMAGNETIC WAVES, AND ELECTRIC AND MAGNETIC FIELDS IN MATTER. TAKING A NONTRADITIONAL APPROACH, MAGNETISM IS DERIVED AS A RELATIVISTIC EFFECT. MATHEMATICAL CONCEPTS ARE INTRODUCED IN PARALLEL WITH THE PHYSICS TOPICS AT HAND, MAKING THE MOTIVATIONS

CLEAR. MACROSCOPIC PHENOMENA ARE DERIVED RIGOROUSLY FROM THE UNDERLYING MICROSCOPIC PHYSICS. WITH WORKED EXAMPLES, HUNDREDS OF ILLUSTRATIONS, AND NEARLY 600 END-OF-CHAPTER PROBLEMS AND EXERCISES, THIS TEXTBOOK IS IDEAL FOR ELECTRICITY AND MAGNETISM COURSES. SOLUTIONS TO THE EXERCISES ARE AVAILABLE FOR INSTRUCTORS AT [WWW.CAMBRIDGE.ORG/PURCELL-MORIN](http://WWW.CAMBRIDGE.ORG/PURCELL-MORIN).

**ELECTROMAGNETIC COMPOSSIBILITY, SECOND EDITION**, - HEINZ M. SCHLICHE  
2020-12-17

THIS BOOK ADDRESSES ONE OF THE MOST PRESSING, CONTROVERSIAL, AND MISUNDERSTOOD AREAS OF ELECTRICAL ENGINEERING: THE COST-EFFECTIVE PREVENTION OF ELECTROMAGNETIC INTERFERENCE AND HAZARDS IN AUTOMATED INDUSTRIAL SYSTEMS. IT FOCUSES ON CIVILIAN NONCOMMUNICATION ENVIRONMENT.

*ADVANCED ENGINEERING*

*ELECTROMAGNETICS* - CONSTANTINE A. BALANIS 2012-01-24

BALANIS' SECOND EDITION OF ADVANCED ENGINEERING

ELECTROMAGNETICS – A GLOBAL BEST-SELLER FOR OVER 20 YEARS – COVERS THE ADVANCED KNOWLEDGE ENGINEERS INVOLVED IN ELECTROMAGNETIC NEED TO KNOW, PARTICULARLY AS THE TOPIC RELATES TO THE FAST-MOVING, CONTINUALLY EVOLVING, AND RAPIDLY EXPANDING FIELD OF WIRELESS COMMUNICATIONS. THE IMMENSE INTEREST IN WIRELESS COMMUNICATIONS AND THE EXPECTED INCREASE IN

WIRELESS COMMUNICATIONS SYSTEMS PROJECTS (ANTENNA, MICROWAVE AND WIRELESS COMMUNICATION) POINTS TO AN INCREASE IN THE NUMBER OF ENGINEERS NEEDED TO SPECIALIZE IN THIS FIELD. IN ADDITION, THE INSTRUCTOR BOOK COMPANION SITE CONTAINS A RICH COLLECTION OF MULTIMEDIA RESOURCES FOR USE WITH THIS TEXT. RESOURCES INCLUDE: READY-MADE LECTURE NOTES IN POWER POINT FORMAT FOR ALL THE CHAPTERS.

FORTY-NINE MATLAB® PROGRAMS TO COMPUTE, PLOT AND ANIMATE SOME OF THE WAVE PHENOMENA NEARLY 600 END-OF-CHAPTER PROBLEMS, THAT'S AN AVERAGE OF 40 PROBLEMS PER CHAPTER (200 NEW PROBLEMS; 50% MORE THAN IN THE FIRST EDITION) A THOROUGHLY UPDATED SOLUTIONS MANUAL 2500 SLIDES FOR INSTRUCTORS ARE INCLUDED.

*ELECTROMAGNETIC WAVES AND LASERS* - WAYNE D. KIMURA  
2017-12-08

THIS BOOK REVIEWS BASIC ELECTROMAGNETIC (EM) WAVE THEORY AND APPLIES IT SPECIFICALLY TO LASERS IN ORDER TO GIVE THE READER NOT ONLY TANGIBLE EXAMPLES OF HOW THE THEORY IS MANIFESTED IN REAL LIFE, BUT ALSO PRACTICAL KNOWLEDGE ABOUT LASERS, AND THEIR OPERATION AND USAGE. THE LATTER CAN BE USEFUL FOR THOSE INVOLVED WITH USING LASERS. AS A SHORT TREATISE ON THIS SUBJECT MATTER, THIS BOOK IS NOT INTENDED TO DWELL DEEPLY INTO THE DETAILS OF EM WAVES NOR LASERS. A BIBLIOGRAPHY IS PROVIDED

FOR THOSE WHO WISH TO EXPLORE IN MORE DEPTH THE TOPICS COVERED IN THIS BOOK. RATHER THE AIM OF THIS BOOK IS TO OFFER A QUICK OVERVIEW, WHICH WILL ALLOW THE READER TO GAIN A COMPETENT GENERAL UNDERSTANDING OF EM WAVES AND LASERS.

*FIELDS AND WAVES IN COMMUNICATION ELECTRONICS* - SIMON RAMO

1994-02-09

THIS COMPREHENSIVE REVISION BEGINS WITH A REVIEW OF STATIC ELECTRIC AND MAGNETIC FIELDS, PROVIDING A WEALTH OF RESULTS USEFUL FOR STATIC AND TIME-DEPENDENT FIELDS PROBLEMS IN WHICH THE SIZE OF THE DEVICE IS SMALL COMPARED WITH A WAVELENGTH. SOME OF THE STATIC RESULTS SUCH AS INDUCTANCE OF TRANSMISSION LINES CALCULATIONS CAN BE USED FOR MICROWAVE FREQUENCIES. FAMILIARITY WITH VECTOR OPERATIONS, INCLUDING DIVERGENCE AND CURL, ARE DEVELOPED IN CONTEXT IN THE CHAPTERS ON STATICS. PACKED WITH USEFUL DERIVATIONS AND APPLICATIONS.

**ENGINEERING ELECTROMAGNETICS AND WAVES, GLOBAL EDITION** - AZIZ INAN  
2015-07-31

FOR COURSES IN ELECTROMAGNETIC FIELDS & WAVES ENGINEERING ELECTROMAGNETICS AND WAVES PROVIDES ENGINEERING STUDENTS WITH A SOLID GRASP OF ELECTROMAGNETIC FUNDAMENTALS AND ELECTROMAGNETIC WAVES BY EMPHASISING PHYSICAL UNDERSTANDING AND PRACTICAL APPLICATIONS. THE TOPICAL

ORGANISATION OF THE TEXT STARTS WITH AN INITIAL EXPOSURE TO TRANSMISSION LINES AND TRANSIENTS ON HIGH-SPEED DISTRIBUTED CIRCUITS, NATURALLY BRIDGING ELECTRICAL CIRCUITS AND ELECTROMAGNETICS. THIS BOOK IS DESIGNED FOR UPPER-DIVISION COLLEGE AND UNIVERSITY ENGINEERING STUDENTS, FOR THOSE WHO WISH TO LEARN THE SUBJECT THROUGH SELF-STUDY, AND FOR PRACTICING ENGINEERS WHO NEED AN UP-TO-DATE REFERENCE TEXT. THE STUDENT USING THIS TEXT IS ASSUMED TO HAVE COMPLETED TYPICAL LOWER-DIVISION COURSES IN PHYSICS AND MATHEMATICS AS WELL AS A FIRST COURSE ON ELECTRICAL ENGINEERING CIRCUITS. TEACHING AND LEARNING EXPERIENCE THIS PROGRAM WILL PROVIDE A BETTER TEACHING AND LEARNING EXPERIENCE—FOR YOU AND YOUR STUDENTS. IT PROVIDES: MODERN CHAPTER ORGANIZATION EMPHASIS ON PHYSICAL UNDERSTANDING DETAILED EXAMPLES, SELECTED APPLICATION EXAMPLES, AND ABUNDANT ILLUSTRATIONS NUMEROUS END-OF-CHAPTER PROBLEMS, EMPHASIZING SELECTED PRACTICAL APPLICATIONS HISTORICAL NOTES ON THE GREAT SCIENTIFIC PIONEERS EMPHASIS ON CLARITY WITHOUT SACRIFICING RIGOR AND COMPLETENESS HUNDREDS OF FOOTNOTES PROVIDING PHYSICAL INSIGHT, LEADS FOR FURTHER READING, AND DISCUSSION OF SUBTLE AND INTERESTING CONCEPTS AND APPLICATIONS THE FULL TEXT DOWNLOADED TO YOUR COMPUTER

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*CLASSICAL ELECTROMAGNETIC RADIATION* - MARK A. HEALD 2012-12-19  
NEWLY CORRECTED, THIS HIGHLY ACCLAIMED TEXT IS SUITABLE FOR ADVANCED PHYSICS COURSES. THE AUTHORS PRESENT A VERY ACCESSIBLE MACROSCOPIC VIEW OF CLASSICAL ELECTROMAGNETICS THAT EMPHASIZES INTEGRATING ELECTROMAGNETIC THEORY WITH PHYSICAL OPTICS. THE SURVEY FOLLOWS THE HISTORICAL DEVELOPMENT OF PHYSICS, CULMINATING IN THE USE OF FOUR-VECTOR RELATIVITY TO FULLY INTEGRATE ELECTRICITY WITH MAGNETISM. CORRECTED AND EMENDED REPRINT OF THE BROOKS/COLE THOMSON LEARNING, 1994, THIRD EDITION.

**FIELD THEORY OF GUIDED WAVES** - ROBERT E. COLLIN 1990-12-15

"CO-PUBLISHED WITH OXFORD UNIVERSITY PRESS LONG CONSIDERED THE MOST COMPREHENSIVE ACCOUNT OF ELECTROMAGNETIC THEORY AND ANALYTICAL METHODS FOR SOLVING WAVEGUIDE AND CAVITY PROBLEMS, THIS NEW SECOND EDITION HAS BEEN COMPLETELY REVISED AND THOROUGHLY UPDATED -- APPROXIMATELY 40% NEW MATERIAL! PACKED WITH EXAMPLES AND APPLICATIONS FIELD THEORY OF GUIDED WAVES PROVIDES SOLUTIONS TO A LARGE NUMBER OF PRACTICAL STRUCTURES OF CURRENT INTEREST. THE BOOK INCLUDES AN EXCEPTIONALLY COMPLETE DISCUSSION OF SCALAR AND DYADIC GREEN FUNCTIONS. BOTH A VALUABLE REVIEW AND SOURCE OF BASIC INFORMATION ON APPLIED MATHEMATICAL TOPICS AND A HANDS-ON SOURCE FOR SOLUTION METHODS AND TECHNIQUES, THIS BOOK BELONGS ON THE DESK OF ALL ENGINEERS WORKING IN MICROWAVE AND ANTENNA SYSTEMS!" SPONSORED BY: IEEE ANTENNAS AND PROPAGATION SOCIETY ELECTROMAGNETIC ENGINEERING AND WAVES - AZIZ S. INAN 2014-08-20  
"ENGINEERING ELECTROMAGNETICS AND WAVES" IS DESIGNED FOR UPPER-DIVISION COLLEGE AND UNIVERSITY ENGINEERING STUDENTS, FOR THOSE WHO WISH TO LEARN THE SUBJECT THROUGH SELF-STUDY, AND FOR PRACTICING ENGINEERS WHO NEED AN UP-TO-DATE REFERENCE TEXT. THE STUDENT USING THIS TEXT IS ASSUMED TO HAVE COMPLETED TYPICAL LOWER-DIVISION COURSES IN PHYSICS AND MATHEMATICS AS WELL AS A FIRST

COURSE ON ELECTRICAL ENGINEERING CIRCUITS." "THIS BOOK PROVIDES ENGINEERING STUDENTS WITH A SOLID GRASP OF ELECTROMAGNETIC FUNDAMENTALS AND ELECTROMAGNETIC WAVES BY EMPHASIZING PHYSICAL UNDERSTANDING AND PRACTICAL APPLICATIONS. THE TOPICAL ORGANIZATION OF THE TEXT STARTS WITH AN INITIAL EXPOSURE TO TRANSMISSION LINES AND TRANSIENTS ON HIGH-SPEED DISTRIBUTED CIRCUITS, NATURALLY BRIDGING ELECTRICAL CIRCUITS AND ELECTROMAGNETICS. TEACHING AND LEARNING EXPERIENCE THIS PROGRAM WILL PROVIDE A BETTER TEACHING AND LEARNING EXPERIENCE-FOR YOU AND YOUR STUDENTS. IT PROVIDES: MODERN CHAPTER ORGANIZATION EMPHASIS ON PHYSICAL UNDERSTANDING DETAILED EXAMPLES, SELECTED APPLICATION EXAMPLES, AND ABUNDANT ILLUSTRATIONS NUMEROUS END-OF-CHAPTER PROBLEMS, EMPHASIZING SELECTED PRACTICAL APPLICATIONS HISTORICAL NOTES ON THE GREAT SCIENTIFIC PIONEERS EMPHASIS ON CLARITY WITHOUT SACRIFICING RIGOR AND COMPLETENESS HUNDREDS OF FOOTNOTES PROVIDING PHYSICAL INSIGHT, LEADS FOR FURTHER READING, AND DISCUSSION OF SUBTLE AND INTERESTING CONCEPTS AND APPLICATIONS"

ELECTROMAGNETICS - EDWARD J.

ROTHWELL 2018-10-03

PROVIDING AN IDEAL TRANSITION FROM INTRODUCTORY TO ADVANCED

CONCEPTS, ELECTROMAGNETICS, SECOND EDITION BUILDS A FOUNDATION THAT ALLOWS ELECTRICAL ENGINEERS TO CONFIDENTLY PROCEED WITH THE DEVELOPMENT OF ADVANCED EM STUDIES, RESEARCH, AND APPLICATIONS. THIS SECOND EDITION OF A POPULAR TEXT CONTINUES TO OFFER COVERAGE THAT SPANS THE ENTIRE FIELD, FROM ELECTROSTATICS TO THE INTEGRAL SOLUTIONS OF MAXWELL'S EQUATIONS. THE BOOK PROVIDES A FIRM GROUNDING IN THE FUNDAMENTAL CONCEPTS OF ELECTROMAGNETICS AND BOLSTERS UNDERSTANDING THROUGH THE USE OF CLASSIC EXAMPLES IN SHIELDING, TRANSMISSION LINES, WAVEGUIDES, PROPAGATION THROUGH VARIOUS MEDIA, RADIATION, ANTENNAS, AND SCATTERING. MATHEMATICAL APPENDICES PRESENT HELPFUL BACKGROUND INFORMATION IN THE AREAS OF FOURIER TRANSFORMS, DYADICS, AND BOUNDARY VALUE PROBLEMS. THE SECOND EDITION ADDS A NEW AND EXTENSIVE CHAPTER ON INTEGRAL EQUATION METHODS WITH APPLICATIONS TO GUIDED WAVES, ANTENNAS, AND SCATTERING. UTILIZING THE ENGAGING STYLE THAT MADE THE FIRST EDITION SO APPEALING, THIS SECOND EDITION CONTINUES TO EMPHASIZE THE MOST ENDURING AND RESEARCH-CRITICAL ELECTROMAGNETIC PRINCIPLES.

CLASSICAL ELECTROMAGNETISM -

JERROLD FRANKLIN 2017-10-18

THIS TEXT ADVANCES FROM THE BASIC LAWS OF ELECTRICITY AND MAGNETISM

TO CLASSICAL ELECTROMAGNETISM IN A QUANTUM WORLD. THE TREATMENT FOCUSES ON CORE CONCEPTS AND RELATED ASPECTS OF MATH AND PHYSICS. 2016 EDITION.

**ELECTROMAGNETIC WAVES** - CARLO G. SOMEDA 2017-12-19

ADAPTED FROM A SUCCESSFUL AND THOROUGHLY FIELD-TESTED ITALIAN TEXT, THE FIRST EDITION OF ELECTROMAGNETIC WAVES WAS VERY WELL RECEIVED. ITS BROAD, INTEGRATED COVERAGE OF ELECTROMAGNETIC WAVES AND THEIR APPLICATIONS FORMS THE CORNERSTONE ON WHICH THE AUTHOR BASED THIS SECOND EDITION. WORKING FROM MAXWELL'S EQUATIONS TO APPLICATIONS IN OPTICAL COMMUNICATIONS AND PHOTONICS, ELECTROMAGNETIC WAVES, SECOND EDITION FORGES A LINK BETWEEN BASIC PHYSICS AND REAL-LIFE PROBLEMS IN WAVE PROPAGATION AND RADIATION. ACCOMPLISHED RESEARCHER AND EDUCATOR CARLO G. SOMEDA USES A MODERN APPROACH TO THE SUBJECT. UNLIKE OTHER BOOKS IN THE FIELD, IT SURVEYS ALL MAJOR AREAS OF ELECTROMAGNETIC WAVES IN A SINGLE TREATMENT. THE BOOK BEGINS WITH A DETAILED TREATMENT OF THE MATHEMATICS OF MAXWELL'S EQUATIONS. IT FOLLOWS WITH A DISCUSSION OF POLARIZATION, DELVES INTO PROPAGATION IN VARIOUS MEDIA, DEVOTES FOUR CHAPTERS TO GUIDED PROPAGATION, LINKS THE CONCEPTS TO PRACTICAL APPLICATIONS, AND CONCLUDES WITH RADIATION,

DIFFRACTION, COHERENCE, AND RADIATION STATISTICS. THIS EDITION FEATURES MANY NEW AND REWORKED PROBLEMS, UPDATED REFERENCES AND SUGGESTIONS FOR FURTHER READING, A COMPLETELY REVISED APPENDIX ON BESSEL FUNCTIONS, AND NEW DEFINITIONS SUCH AS ANTENNA EFFECTIVE HEIGHT. ILLUSTRATING THE CONCEPTS WITH EXAMPLES IN EVERY CHAPTER, ELECTROMAGNETIC WAVES, SECOND EDITION IS AN IDEAL INTRODUCTION FOR THOSE NEW TO THE FIELD AS WELL AS A CONVENIENT REFERENCE FOR SEASONED PROFESSIONALS.

ELECTROMAGNETICS, SECOND EDITION - EDWARD J. ROTHWELL 2008-10-28

PROVIDING AN IDEAL TRANSITION FROM INTRODUCTORY TO ADVANCED CONCEPTS, ELECTROMAGNETICS, SECOND EDITION BUILDS A FOUNDATION THAT ALLOWS ELECTRICAL ENGINEERS TO CONFIDENTLY PROCEED WITH THE DEVELOPMENT OF ADVANCED EM STUDIES, RESEARCH, AND APPLICATIONS. THIS SECOND EDITION OF A POPULAR TEXT CONTINUES TO OFFER COVERAGE THAT SPANS THE ENTIRE FIELD, FROM ELECTROSTATICS TO THE INTEGRAL SOLUTIONS OF MAXWELL'S EQUATIONS. THE BOOK PROVIDES A FIRM GROUNDING IN THE FUNDAMENTAL CONCEPTS OF ELECTROMAGNETICS AND BOLSTERS UNDERSTANDING THROUGH THE USE OF CLASSIC EXAMPLES IN SHIELDING, TRANSMISSION LINES, WAVEGUIDES, PROPAGATION THROUGH VARIOUS MEDIA, RADIATION, ANTENNAS, AND

SCATTERING. MATHEMATICAL APPENDICES PRESENT HELPFUL BACKGROUND INFORMATION IN THE AREAS OF FOURIER TRANSFORMS, DYADICS, AND BOUNDARY VALUE PROBLEMS. THE SECOND EDITION ADDS A NEW AND EXTENSIVE CHAPTER ON INTEGRAL EQUATION METHODS WITH APPLICATIONS TO GUIDED WAVES, ANTENNAS, AND SCATTERING. UTILIZING THE ENGAGING STYLE THAT MADE THE FIRST EDITION SO APPEALING, THIS SECOND EDITION CONTINUES TO EMPHASIZE THE MOST ENDURING AND RESEARCH-CRITICAL ELECTROMAGNETIC PRINCIPLES.

*ELECTROMAGNETICS AND CALCULATION OF FIELDS* - NATHAN IDA  
2013-03-07

THIS INTRODUCTION TO ELECTROMAGNETIC FIELDS EMPHASIZES THE COMPUTATION OF FIELDS AND THE DEVELOPMENT OF THEORETICAL RELATIONS. IT PRESENTS THE ELECTROMAGNETIC FIELD AND MAXWELL'S EQUATIONS WITH A VIEW TOWARD CONNECTING THE DISPARATE APPLICATIONS TO THE UNDERLYING RELATIONS, ALONG WITH COMPUTATIONAL METHODS OF SOLVING THE EQUATIONS.

**FOUNDATIONS OF GEOPHYSICAL ELECTROMAGNETIC THEORY AND METHODS** - MICHAEL S. ZHDANOV  
2017-10-27

FOUNDATIONS OF GEOPHYSICAL ELECTROMAGNETIC THEORY AND METHODS, SECOND EDITION, BUILDS ON THE STRENGTH OF THE FIRST EDITION TO OFFER A SYSTEMATIC EXPOSITION OF

GEOPHYSICAL ELECTROMAGNETIC THEORY AND METHODS. THIS NEW EDITION HIGHLIGHTS PROGRESS MADE OVER THE LAST DECADE, WITH A SPECIAL FOCUS ON RECENT ADVANCES IN MARINE AND AIRBORNE ELECTROMAGNETIC METHODS. ALSO INCLUDED ARE RECENT CASE HISTORIES ON PRACTICAL APPLICATIONS IN TECTONIC STUDIES, MINERAL EXPLORATION, ENVIRONMENTAL STUDIES AND OFF-SHORE HYDROCARBON EXPLORATION. THE BOOK IS IDEAL FOR GEOSCIENTISTS WORKING IN ALL AREAS OF GEOPHYSICS, INCLUDING EXPLORATION GEOPHYSICS AND APPLIED PHYSICS, AS WELL AS GRADUATE STUDENTS AND RESEARCHERS WORKING IN THE FIELD OF ELECTROMAGNETIC THEORY AND METHODS. PRESENTS THEORETICAL AND METHODOLOGICAL FOUNDATIONS OF GEOPHYSICAL FIELD THEORY SYNTHESIZES FUNDAMENTAL THEORY AND THE MOST RECENT ACHIEVEMENTS OF ELECTROMAGNETIC (EM) GEOPHYSICAL METHODS IN THE FRAMEWORK OF A UNIFIED SYSTEMATIC EXPOSITION OFFERS A UNIQUE BREADTH AND COMPLETENESS IN PROVIDING A GENERAL PICTURE OF THE CURRENT STATE-OF-THE-ART IN EM GEOPHYSICAL TECHNOLOGY DISCUSSES PRACTICAL ASPECTS OF EM EXPLORATION FOR MINERAL AND ENERGY RESOURCES

**INTRODUCTION TO ELECTROMAGNETIC FIELDS** - CLAYTON R. PAUL 1998  
THIS INTRODUCTORY TEXT PROVIDES COVERAGE OF BOTH STATIC AND DYNAMIC FIELDS. THERE ARE REFERENCES

TO COMPUTER VISUALISATION (MATHCAD) AND COMPUTATION THROUGHOUT THE TEXT, AND THERE ARE MATHCAD ELECTRONIC BOOKS AVAILABLE FREE ON THE INTERNET TO HELP STUDENTS VISUALISE ELECTROMAGNETIC FIELDS. IMPORTANT EQUATIONS ARE HIGHLIGHTED IN THE TEXT, AND THERE ARE EXAMPLES AND PROBLEMS THROUGHOUT, WITH ANSWERS TO THE PROBLEMS AT THE BACK OF THE BOOK.

*ATOMS IN ELECTROMAGNETIC FIELDS - C COHEN-TANNOUJJI 2004-11-25*  
 ' THIS INVALUABLE BOOK PRESENTS PAPERS WRITTEN DURING THE LAST 40 YEARS BY CLAUDE COHEN-TANNOUJJI AND HIS COLLABORATORS ON VARIOUS PHYSICAL EFFECTS WHICH CAN BE OBSERVED ON ATOMS INTERACTING WITH ELECTROMAGNETIC FIELDS. IT CONSISTS OF A PERSONAL SELECTION OF REVIEW PAPERS, LECTURES GIVEN AT SCHOOLS, AS WELL AS ORIGINAL EXPERIMENTAL AND THEORETICAL PAPERS. EMPHASIS IS PLACED ON PHYSICAL MECHANISMS AND ON GENERAL APPROACHES (SUCH AS THE DRESSED ATOM APPROACH) HAVING A WIDE RANGE OF APPLICATIONS. VARIOUS TOPICS ARE DISCUSSED, SUCH AS ATOMS IN INTENSE LASER FIELDS, PHOTON CORRELATIONS, QUANTUM JUMPS, RADIATIVE CORRECTIONS, LASER COOLING AND TRAPPING, BOSE-EINSTEIN CONDENSATION. IN THIS NEW EDITION, ABOUT 200-PAGE OF NEW MATERIAL HAS BEEN ADDED. CONTENTS: ATOMS IN WEAK BROADBAND QUASIRESONANT LIGHT FIELDS. LIGHTS SHIFTS —

LINEAR SUPERPOSITIONS OF ATOMIC SUBLEVELS ATOMS IN STRONG RADIOFREQUENCY FIELDS. THE DRESSED ATOM APPROACH IN THE RADIOFREQUENCY DOMAIN ATOMS IN INTENSE RESONANT LASER BEAMS. THE DRESSED ATOM APPROACH IN THE OPTICAL DOMAIN PHOTON CORRELATIONS AND QUANTUM JUMPS. THE RADIATIVE CASCADE OF THE DRESSED ATOM ATOMS IN HIGH FREQUENCY FIELDS OR IN THE VACUUM FIELD. SIMPLE PHYSICAL PICTURES FOR RADIATIVE CORRECTIONS ATOMIC MOTION IN LASER LIGHT SISYPHUS COOLING AND SUBRECOIL COOLING L<sup>2</sup> VY STATISTICS AND LASER COOLING BOSE-EINSTEIN CONDENSATION READERSHIP: GRADUATE STUDENTS, ACADEMICS, RESEARCHERS AND ENGINEERS IN ATOMIC AND LASER PHYSICS. KEYWORDS: ATOM-PHOTON INTERACTIONS; LASER COOLING AND TRAPPING; ULTRACOLD ATOMS KEY FEATURES: EACH REPRINT IN THE VOLUME IS PRECEDED BY A SHORT COMMENTARY GIVING ITS MOTIVATIONS, EXPLAINING HOW IT FITS IN WITH THE GENERAL EVOLUTION OF THE RESEARCH FIELD, AND POINTING OUT CONNECTIONS BETWEEN WORKS DONE IN DIFFERENT PERIODS REVIEWS: "FOR MANY APPLICATIONS ON THE TOPICS OF THIS JOURNAL, THE ABSOLUTE UNIQUE PRESENTATION BY COHEN-TANNOUJJI OF HIS RESEARCH FIELD WILL BE MOST VALUABLE." LASER AND PARTICLE BEAMS "THE PRODUCTION QUALITY IS VERY HIGH; EVEN THE SMALLEST SYMBOLS ARE EASILY READABLE, AND

SOME PAPERS ARE REPRODUCED IN COLOR. THE CLARITY OF THE EXPOSITION, THE WIDE RANGE OF TOPICS, AND THE LOGIC OF THE PRESENTATION MAKE THIS A VALUABLE TEACHING REFERENCE. THIS BOOK IS HIGHLY RECOMMENDED FOR PHYSICISTS AND STUDENTS WORKING ON ATOMS IN INTENSE LASER FIELDS, LASER COOLING AND TRAPPING AND BOSE-EINSTEIN CONDENSATION."OPTICS & PHOTONICS NEWS'

**ELECTROMAGNETIC FIELDS** - J. VAN BLADEL 1985-06-01

**ELECTROMAGNETIC FIELDS AND LIFE** - A. PRESMAN 2013-06-29

A BROAD REGION OF THE ELECTROMAGNETIC SPECTRUM LONG ASSUMED TO HAVE NO INFLUENCE ON LIVING SYSTEMS UNDER NATURAL CONDITIONS HAS BEEN CRITICALLY RE-EXAMINED OVER THE PAST DECADE. THIS SPECTRAL REGION EXTENDS FROM THE SUPERHIGH RADIO FREQUENCIES, THROUGH DECREASING FREQUENCIES, TO AND INCLUDING ESSENTIALLY STATIC ELECTRIC AND MAGNETIC FIELDS. THE AUTHOR OF THIS MONOGRAPH, A. S. PRESMAN, HAS REVIEWED NOT ONLY THE EXTENSIVE RUSSIAN LITERATURE, BUT ALSO ALMOST EQUALLY

COMPREHENSIVELY THE NON-RUSSIAN LITERATURE, DEALING WITH BIOLOGICAL INFLUENCES OF THESE FIELDS. TREATED ALSO IS LITERATURE SHEDDING SOME LIGHT ON POSSIBLE THEORETICAL FOUNDATIONS FOR THESE PHENOMENA. A SUBSTANTIAL, RAPIDLY INCREASING NUMBER OF STUDIES IN MANY LABORATORIES AND COUNTRIES HAS NOW CLEARLY ESTABLISHED BIOLOGICAL INFLUENCES WHICH ARE INDEPENDENT OF THE THEORETICALLY PREDICTABLE, SIMPLE THERMAL EFFECTS. INDEED MANY OF THE EFFECTS ARE PRODUCED BY FIELD STRENGTHS VERY CLOSE TO THOSE WITHIN THE NATURAL ENVIRONMENT. THE AUTHOR HAS, EVEN MORE IMPORTANTLY, SET FORTH A NOVEL, IMAGINATIVE GENERAL HYPOTHESIS IN WHICH IT IS POSTULATED THAT SUCH ELECTROMAGNETIC FIELDS NORMALLY SERVE AS CONVEYORS OF INFORMATION FROM THE ENVIRONMENT TO THE ORGANISM, WITHIN THE ORGANISM, AND AMONG ORGANISMS. HE POSTULATES THAT IN THE COURSE OF EVOLUTION ORGANISMS HAVE COME TO EMPLOY THESE FIELDS IN CONJUNCTION WITH THE WELL-KNOWN SENSORY, NERVOUS, AND ENDOCRINE SYSTEMS IN EFFECTING COORDINATION AND INTEGRATION.