

Online Library  
Antenna And  
Wave Propagation  
By K D Prasad

***Antenna  
And Wave  
Propagatio  
n By K D  
Prasad***

*This practical  
resource  
covers the  
basics of elec  
tromagnetics,*

*Page 1/180*

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Antenna And  
Wave Propagation

**wave**

By K D Prasad

**propagation,  
and antennas  
for radiated  
RF projects.  
General, high-  
level  
scenarios of  
one-way, two-  
antenna RF tra-  
nsmission-  
reception**

Online Library  
Antenna And  
Wave Propagation  
*(also known as  
the Friis*

*Equation)*

*systems are  
illustrated. C  
haracteristics  
of electromagn  
etic waves,  
free space  
loss,  
multipath  
loss, and*

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**Fresnel zone  
loss are  
presented.**

**Antenna  
groupings,  
including  
isotropic  
point source,  
wire,  
aperture, and  
slot and array  
are explained.**

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Wave Propagation  
**Antenna  
measurements**  
By K D Prasad

*are also  
presented,  
including  
squared  
wavelengths,  
?2, this  
electrical  
sizing  
resulting in  
low, medium,*

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Antenna And  
Wave Propagation  
and high  
directivity

(gain)

antennas.

antenna

parameters are

discussed, as

well as

mathematical

analysis of

the selected

antennas and

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*parameters,  
including  
electric and  
magnetic field  
intensity,  
power density,  
input  
impedance,  
total radiated  
power,  
directivity  
(and gain),*

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*efficiency,  
effective*

*area, and  
effective  
height.*

*Receiver noise  
and received  
noise that  
addresses  
various receiv  
er-internal in-  
band noise and*



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*external noise that can be captured by antennas and sent to receiver-internal RF circuitry are examined. Signal-to-noise ratio (SNR), which discusses the*

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*necessity of  
establishing  
an appropriate  
SNR for the RF  
receiver and  
received RF  
signal  
application  
whether voice  
or digital, is  
presented.  
Written by an*

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*expert in the  
field with  
years of  
practical  
experience,  
this book will  
help readers  
understand the  
technical  
field of  
antennas and  
radiated RF*

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**wave**  
By K D Prasad  
**propagation.**

*Suitable for  
professional  
engineers and  
students who  
specialize in  
antenna,  
communication  
and radar  
systems, this  
book provides*

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*a thorough  
introduction  
to the basic  
principles of  
electromagneti  
c wave  
propagation of  
radio  
frequencies in  
real-world  
conditions.  
The book is*

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*primarily  
designed to  
cater to the  
needs of  
undergraduate  
and  
postgraduate  
students of  
Electronics  
and  
Communication  
Engineering*

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Antenna And  
Wave Propagation

*and allied  
branches. It*

*also caters  
for*

*fundamental  
requirements  
of*

*professionals  
working on  
design and  
development of  
antenna and*

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**wave**

By K D Prasad

**propagation**

**related**

**equipment**

**either in**

**research**

**laboratories**

**or industries**

**or academic**

**institutions**

**elsewhere. The**

**book has been**



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*written with  
intent to  
grasp the  
basic  
understanding  
of theoretical  
as well as  
practical  
aspects of ele  
ctromagnetic  
wave  
propagation*

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Wave Propagation  
**and antenna  
engineering.**  
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*The text has  
been aptly  
scripted  
considering  
the  
requirements  
of average  
students who  
can easily  
grasp and*

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*comprehend the  
basics of wave  
propagation  
and radiation  
mechanism of  
varieties of  
antennas  
coupled with  
their critical  
functionalitie  
s, utilities,  
advantages/dis*

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Wave Propagation

*advantages  
without any  
external  
assistance of  
teachers or  
other  
reference  
books. The  
book broaches  
very well on  
practical  
methods of*

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Wave Propagation  
**parametric  
measurements**  
By K D Prasad

*of antenna  
with right  
measuring test  
equipment and  
associated  
tools. The  
last chapter  
of the book is  
dedicated to  
advance*

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*technology  
adopted in  
design and  
development of  
modern  
antenna. Key  
features • A  
fairly large  
number of well  
labelled  
diagrams to  
provide*

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*practical  
understanding  
of the  
concepts. •*

*The placement  
of numericals  
at appropriate  
places  
develops  
confidence  
among readers  
and enthuses*

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*them further  
to read in  
depth to crack  
any regular or  
competitive  
examinations.*

- *Chapter  
summary  
highlights  
important  
points for  
quick recap*



Online Library  
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Wave Propagation  
*and revision*  
By K D Prasad  
*before*

*examination. •*

*Well-crafted*

*multiple*

*choice*

*questions with*

*answers at the*

*end of each*

*chapter to*

*stimulate*

*thought*

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*process and  
prepare better  
for viva-voce  
and*

*competitive  
examinations.*

*• Appropriate  
number of  
unsolved  
numerical  
problems with  
answers to*

Online Library  
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*improve*  
By K D Prasad  
*problem*

*solving skill  
of students.*

*Electronics  
Technician*

*Radiowave*

*Propagation*

*The Physics*

*and*

*Mathematics of  
Electromagneti*

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***c Wave***

***Propagation in  
Cellular  
Wireless***

***Communication***

***Antenna Theory***

This comprehensive guide helps readers understand the theory and techniques needed to analyze and model

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radio wave  
propagation in  
complex

environments. All of the essential topics are covered, from the fundamental concepts of radio systems, to complex propagation phenomena. These topics include

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diffraction, ray tracing, scattering, atmospheric ducting, ionospheric ducting, scintillation, and propagation through both urban and non-urban environments. Emphasis is placed on practical procedures, with detailed discussion

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of numerical and mathematical methods providing readers with the necessary skills to build their own propagation models and develop their own techniques. MATLAB functions illustrating key modeling ideas are

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provided online.  
By K D Prasad

This is an invaluable resource for anyone wanting to use propagation models to understand the performance of radio systems for navigation, radar, communications, or broadcasting.

This book, now in its



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Second Edition, is primarily intended for the undergraduate and postgraduate students of electronics and communication, electronics and electrical and telecommunication engineering. It

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provides a thorough understanding of the fundamentals and applications of the subject. The edition discusses the properties of several types of antennas such as dipoles, loop, Yagi-Uda, log-periodic, slot/DRA and microstrip

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antennas and also explains the phenomenon of wave propagation with emphasis on theory of operation and design procedures. It provides a comprehension of the principles of radiation and methods of

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excitation. The book also focuses on antenna

measurements along with necessary requirements and different methods of measurement.

Written in an easy-to-understand manner, the text includes several illustrative

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examples. A large number of solved examples and exercise problems with varying difficulty levels are included to reinforce the theoretical understanding of concepts. The book also contains several objective-type

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questions in each chapter along with a Question Bank at the end of the book. The Appendices provide a rich source of information and expressions as well as design data. NEW TO THE SECOND EDITION Separate new chapters are

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devoted to: •

Reflector Antennas •

Slot and Dielectric  
Resonator Antennas

• Modern Antennas

• Effect of Ground  
on Antenna

Performances

Antennas and Wave  
Propagation Oxford

Higher Education

ANTENNAS AND

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WAVE  
PROPAGATION  
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An Introduction for  
the Non-Specialist  
Radio Wave  
Propagation and  
Parabolic Equation  
Modeling  
Wave Propagation  
and Antennas  
The goal of this book  
is to discuss



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fundamentals of  
electromagnetic wave  
propagation,  
especially radiowave  
propagation,  
groundwave  
propagation, surface  
wave propagation,  
maritime  
communication,  
radar applications in  
terms of parabolic

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equation modeling  
and simulation  
approaches This is  
the first book on the  
guided wave  
propagation model in  
nearly two decades.  
This book will cover  
several new  
applications. The  
book also introduces  
several simple and

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sophisticated  
MATLAB scripts as  
well as virtual  
electromagnetic tools  
for several well-  
known  
electromagnetic  
propagation  
problems.

Clear, coherent work  
for graduate-level  
study discusses the

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Maxwell field equations, radiation from wire antennas, wave aspects of radio-astronomical antenna theory, the Doppler effect, and more.

Ranging from navigation to communication and defense, antenna and wave propagation

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technology has  
diverse applications.  
The extensive content  
of this book provides  
the readers with a  
thorough  
understanding of the  
subject. This book  
outlines the processes  
and applications of  
wave propagation in  
detail through

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elaborate discussions of concepts like phase velocity, types of antenna, polarization, etc. This book consists of contributions made by international experts. It is highly recommended for students pursuing engineering, physics,

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electronics and  
associated disciplines.  
By K. D. Prasad

Antenna and Wave  
Propagation  
Technology  
Analysis and Design  
Introduction to RF  
Propagation  
Foundations of  
Antenna Engineering:  
A Unified Approach  
for Line-of-Sight and

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Multipath  
By K D Prasad

***This is the first  
textbook that  
contains a  
holistic treatment  
of antennas both  
for traditional  
antennas  
mounted on  
masts (Line-of-  
Sight antenna  
systems) and for  
small antennas***



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Wave Propagation

***used on modern  
wireless devices  
such as smart  
phones being  
subject to signal  
variations  
(fading) due to  
multipath  
propagation. The  
focus is on  
characterization,  
as well as  
describing***

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**classical  
antennas by  
modern complex  
vector theory -  
thereby linking  
together many  
disciplines such  
as  
electromagnetic  
theory, classical  
antenna theory,  
wave  
propagation, and**

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Wave Propagation  
**antenna system  
performance.**  
By K. D. Prasad

**Overall, this book  
represents a  
rethinking of the  
way basic  
antenna theory is  
presented. The  
book contains  
many references  
to important old  
and new papers  
and books on the**

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***analysis and  
design of the  
most useful  
antenna types,  
for the most  
interested  
readers.***

***Antennas and  
Wave  
Propagation is  
written for the  
first course on  
the same. The***

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Wave Propagation  
By K. D. Prasad

***book begins with  
an introduction  
that discusses the  
fundamental  
concepts,  
notations,  
representation  
and principles  
that govern the  
field of antennas.  
A separate  
chapter on  
mathematical***

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Wave Propagation  
**preliminaries is  
discussed**

**followed by  
chapters on every  
aspect of  
antennas from  
Maxwell's  
equations to  
antenna array  
analysis, antenna  
array synthesis,  
antenna  
measurements**

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Wave Propagation  
**and wave  
propagation.**  
By K. D. Prasad

**An accessible  
student-oriented  
approach to  
radiowave  
propagation  
Propagation-the  
process whereby  
a signal is  
conveyed between  
transmitter and  
receiver-has a**

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Antenna And  
Wave Propagation  
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***profound  
influence on  
communication  
systems design.  
Radiowave  
Propagation  
provides an  
overview of the  
physical  
mechanisms that  
govern  
electromagnetic  
wave propagation***



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***in the Earth's  
troposphere and  
ionosphere.  
Developed in  
conjunction with  
a graduate-level  
wave propagation  
course at The  
Ohio State  
University, this  
text offers a  
balance of  
physical and***

***empirical models  
to provide basic  
physical insight  
as well as  
practical methods  
for system  
design.***

***Beginning with  
discussions of  
propagation  
media properties,  
plane waves, and  
antenna and***

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Wave Propagation  
**system concepts,  
successive**

**chapters consider  
the most  
important wave  
propagation  
mechanisms for  
frequencies  
ranging from LF  
up to the  
millimeter wave  
range, including:  
Direct line-of-**

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***sight propagation  
through the  
atmosphere Rain  
attenuation The  
basic theory of  
reflection and  
refraction at  
material  
interfaces and in  
the Earth's  
atmosphere  
Reflection,  
refraction, and***

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***diffraction  
analysis in  
microwave link  
design for a  
specified terrain  
profile Empirical  
path loss models  
for point-to-point  
ground links  
Statistical fading  
models Standard  
techniques for  
prediction of***

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***ground wave  
propagation  
Ionospheric  
propagation, with  
emphasis on the  
skywave  
mechanism at MF  
and HF and on  
ionospheric  
perturbations for  
Earth-space links  
at VHF and  
higher***

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***frequencies A  
survey of other  
propagation  
mechanisms,  
including  
tropospheric  
scatter, meteor  
scatter, and  
propagation  
effects on GPS  
systems  
Radiowave  
Propagation***

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***incorporates  
fundamental  
materials to help  
senior  
undergraduate  
and graduate  
engineering  
students review  
and strengthen  
electromagnetic  
physics skills as  
well as the most  
current empirical***



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**methods**

**recommended by  
the International  
Telecommunicati  
on Union. This  
book can also  
serve as a  
valuable teaching  
and reference  
text for engineers  
working with  
wireless  
communication,**

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*radar, or remote  
sensing systems.*

*By K. D. Prasad*  
**Antenna & wave  
propagation  
Introduction to  
Antennas and RF  
Propagation  
Analysis**

**Radio Wave  
Propagation**  
This text book on  
"Antennas and

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Wave Propagation  
Radio-wave  
Propagation"  
By K. D. Prasad

*describes the theory of various types of antennas that are in current use and the way in which the radiated waves get propagated through space. The theory has been written in a simple and easy-to-*

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Wave Propagation

*understand  
language. Lots of  
worked-out  
examples as well  
as diagrams in 2- D  
and 3-D have been  
included to  
illustrate the  
principles clearly. It  
is hoped that these  
features help the  
students to grasp  
the theories  
involved easily.*

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*Features Provided  
solid grasp of the  
subject. Every  
concept is  
explained in detail  
with 2 dimension or  
3 dimension figures  
wherever  
necessary. Every  
chapter is fortified  
with lots of worked  
examples. Each  
chapter ends with  
review questions*

Online Library  
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Wave Propagation  
and exercise  
problems to allow

*the student to test  
their understanding  
of the material  
covered. Basic  
principles on  
antenna and  
special antennas  
are discussed in  
appendices*

*Contents Antenna  
Basics Point  
Sources Antenna*

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Wave Propagation  
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*Arrays Electric  
Dipole and Thin  
Linear Antennas  
The Loop Antenna  
The Helical  
Antenna and the  
Yagi-Ud array  
Antenna Types  
Propagation of  
Ground and Space  
Waves Sky-Wave  
Propagation  
Appendices.  
The Latest*

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Wave Propagation  
Resource for the  
Study of Antenna  
Theory! In a

*discipline that has  
experienced vast  
technological  
changes, this text  
offers the most  
recent look at all  
the necessary  
topics. Highlights  
include: \* New  
coverage of  
microstrip*



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*antennas provides information essential to a wide variety of practical designs of rectangular and circular patches, including computer programs. \**

*Applications of Fourier transform (spectral) method to antenna radiation. \**

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*Updated material  
on moment  
methods, radar  
cross section,  
mutual  
impedances,  
aperture and horn  
antennas, compact  
range designs, and  
antenna  
measurements. A  
New Emphasis on  
Design! Balanis  
features a*

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*tremendous  
increase in design  
procedures and  
equations. This  
presents a solid  
solution to the  
challenge of  
meeting real-life  
situations faced by  
engineers.*

*Computer  
programs  
contained in the  
book-and*

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*accompanying software have been developed to help engineers analyze, design, and visualize the radiation characteristics of antennas.*

*Antennas and radio propagation are continuously and rapidly evolving and new*

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*challenges arise every day. As a result of these rapid changes the need for up-to-date texts that address this growing field from an interdisciplinary perspective persists. This book, organized into nine chapters, presents new antenna*

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*designs and materials that will be used in the future, due to the trend for higher frequencies, as well as a bird's eye view of some aspects related to radio propagation channel modeling. The book covers the theory but also the practical*

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*aspects of  
technology  
implementation in  
a way that is  
suitable for  
undergraduate and  
graduate-level  
students, as well as  
researchers and  
professional  
engineers.*

*Antenna Theory  
And Wave  
Propagation 2Nd*

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Wave Propagation  
Ed.

By K. D. Prasad  
*An Introduction To  
Electromagnetic  
Wave Propagation  
And Antennas  
Substrate-  
Integrated  
Millimeter-Wave  
Antennas for Next-  
Generation  
Communication  
and Radar Systems  
Antenna And Wave  
Propagation*



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**One of the most  
methodical  
treatments of  
electromagneti  
c wave  
propagation,  
radiation, and s  
cattering—inclu  
ding new  
applications  
and ideas  
Presented in  
two parts, this**

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Wave Propagation  
By K. D. Prasad

***book takes an  
analytical  
approach on  
the subject and  
emphasizes  
new ideas and  
applications  
used today.  
Part one covers  
fundamentals  
of  
electromagneti  
c wave***

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Wave Propagation  
By J. D. Prasad

***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***

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Wave Propagation  
**second part of  
the book**

**explores up-to-date  
applications of  
electromagnetic  
waves—including  
radiometry,  
geophysical  
remote sensing  
and imaging,  
and biomedical  
and signal**

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Antenna And  
Wave Propagation  
**processing  
applications.**

**Written by a  
world renowned  
authority in the  
field of  
electromagneti  
c research, this  
new edition of  
Electromagneti  
c Wave  
Propagation,  
Radiation, and**

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Wave Propagation  
**Scattering:**  
By K D Prasad

***From  
Fundamentals  
to Applications  
presents  
detailed  
applications  
with useful  
appendices,  
including  
mathematical  
formulas, Airy  
function, Abel's***

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**equation,  
Hilbert  
transform, and  
Riemann  
surfaces. The  
book also  
features newly  
revised  
material that  
focuses on the  
following  
topics:  
Statistical wave**

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***theories—which  
have been  
extensively  
applied to  
topics such as  
geophysical  
remote sensing,  
bio-electromag  
netics, bio-  
optics, and bio-  
ultrasound  
imaging  
Integration of***



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**several distinct  
yet related  
disciplines,  
such as  
statistical wave  
theories, comm  
unications,  
signal  
processing, and  
time reversal  
imaging New  
phenomena of  
multiple**

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***scattering, such  
as coherent  
scattering and  
memory effects  
Multiphysics  
applications  
that combine  
theories for  
different  
physical  
phenomena,  
such as seismic  
coda waves,***

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***stochastic wave  
theory, heat  
diffusion, and  
temperature  
rise in  
biological and  
other media  
Metamaterials  
and solitons in  
optical fibers,  
nonlinear  
phenomena,  
and porous***

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**media Primarily  
a textbook for  
graduate  
courses in  
electrical  
engineering,  
Electromagneti  
c Wave  
Propagation,  
Radiation, and  
Scattering is  
also ideal for  
graduate**

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**students in  
bioengineering,  
geophysics,  
ocean  
engineering,  
and  
geophysical  
remote sensing.  
The book is also  
a useful  
reference for  
engineers and  
scientists**

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***working in  
fields such as  
geophysical  
remote sensing,  
bio-medical  
engineering in  
optics and  
ultrasound, and  
new materials  
and integration  
with signal  
processing.  
This work***

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***treats the  
essential  
elements of  
radio wave  
propagation  
without  
requiring  
recourse to  
advanced  
electromagneti  
c concepts and  
equations.  
However, it***

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***provides  
sufficient detail  
to allow those  
concerned with  
wireless  
systems to  
acquire quickly  
a practical  
working  
knowledge of  
the important  
concepts. Radio  
wave***



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***propagation is placed in a practical context by considering the design aspects of communications systems at microwave frequencies. A fuller consideration***

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***of the  
electromagneti  
c properties of  
materials is  
given late in  
the book rather  
than as an  
introductory  
chapter.***

***The aim of this  
book is to give  
an introduction  
to the***

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***fundamental  
principles of  
antennas and  
wave  
propagation.  
Unlike other  
books  
available, there  
is more  
emphasis on  
mathematical  
explanation in  
addition to***

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*physical  
understanding.*

*Physical  
principles are  
explained in  
detail with  
clear diagrams  
to support the  
theory.*

*Antennas and  
Wave  
Propagation:  
Fourth Edition*

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Wave Propagation  
By K.D. Prasad

**Antennas &  
Radio-Wave  
Propagation  
Radio Wave  
Propagation  
Fundamentals  
Physics and  
Applications**

Discusses general  
concepts and  
illustrates them with  
specific examples and  
references from a

# Online Library Antenna And Wave Propagation

variety of antenna systems. This title covers contents related to antenna arrays. It examines more than 100 common antenna working behaviour questions. It clarifies what you need to know about antenna arrays in a 3D manner and various arrangements.

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Wave Propagation  
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Good, No  
Highlights, No  
Markup, all pages are  
intact, Slight  
Shelfwear, may have  
the corners slightly  
dented, may have  
slight color  
changes/slightly  
damaged spine.  
This book emerged  
from teaching a  
graduate level course  
in propagation and

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smart antennas at the Naval Postgraduate School. In its present form, it is suitable not only as a graduate level text, but also as a reference book for industry and research use. The area of radiowave propagation and smart antennas is highly interdisciplinary,



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extracting material  
from electromagn- ics,  
communications, and  
signal processing.

This book is useful to  
workers in  
electromagnetics who  
would like to  
supplement their  
background with  
relevant  
communicational  
aspects and to  
workers in

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communications who would like to supplement their background with relevant electromagnetic aspects. Anyone with a basic understanding of probability, wave propagation, digital communications, and elementary signal processing should be able to appreciate the

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contents of the book.

The book consists of nine chapters with several worked out examples dispersed throughout. Chapter 1 covers the basics of cellular communications.

Chapter 2 covers the basic principles of electromagnetic wave propagation relevant to path loss

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predictions in wireless communications.

Students with little prior background in electromagnetics should find the first few sections of Chapter 2 self-sufficient. Empirical path loss models that are used in system design are treated in Chapter 3. The chapter includes the

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traditional models as well as some of the newer models.

Chapter 4 has a thorough discussion on the causes and characterization of small scale fading.

The topic of spatial correlation that is very important for antenna arrays is discussed there in detail.

Electromagnetic

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Wave Propagation,  
Radiation, and  
Scattering

WAVE

PROPAGATION AND

ANTENNA

ENGINEERING

Antenna and Wave

Propagation

From Fundamentals

to Applications

***Volume 7-Antennas***

***and Wave***

***Propagation***

*Page 110/180*

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**NAVEDTRA 14092**

***An introduction to  
RF propagation that  
spans all  
wireless applications***

***This book provides  
readers with a solid  
understanding of  
the concepts  
involved in the  
propagation of  
electromagnetic  
waves and of the  
commonly used***

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Wave Propagation  
*modeling*

*techniques. While many books cover RFpropagation, most are geared to cellular telephone systems and, therefore, are limited in scope. This title is comprehensive-ittreats the growing number of wireless applications that*



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***range well beyond  
the mobile  
telecommunications  
industry, including  
radar and satellite  
communications.  
The author's  
straightforward,  
clear style makes it  
easy for readers to  
gain the necessary  
background in  
electromagnetics, c  
ommunication theory***

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**, and probability, so they can advance to propagation models for near-earth, indoor, and earth-space propagation. Critical topics that readers would otherwise have to search a number of resources to find are included: \* RF safety chapter**

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***provides a concise presentation of FCC recommendations, including application examples, and prepares readers to work with real-world propagating systems \* Antenna chapter provides an introduction to a wide variety of antennas and***

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***techniques for  
antenna analysis,  
including a  
detailed treatment of  
antenna polarization  
and axial ratio; the  
chapter contains a  
set of curves that  
permit readers to  
estimate polarization  
loss due to axial  
ratio mismatch  
between  
transmitting and***

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*receiving antennas  
without performing  
detailed calculations*

*\* Atmospheric  
effects chapter  
provides curves of  
typical atmospheric  
loss, so that  
expected loss can  
be determined easily*

*\* Rain attenuation  
chapter features a  
summary of how to  
apply the ITU and*

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***Crane rain models \*  
Satellite  
communication  
chapter provides the  
details of earth-  
space propagation  
analysis including  
rain attenuation, atm  
ospheric absorption,  
path length  
determination and  
noisetemperature  
determination  
Examples of widely***

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***used models  
provide all the  
details  
and information  
needed to allow  
readers to apply the  
models  
with confidence.***

***References,  
provided throughout  
the book,  
enable readers to  
explore particular  
topics in greater***

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***depth. Additionally,  
an accompanying  
Wiley ftp site  
provides  
supporting MathCad  
files for select  
figures in the book.  
With its emphasis  
on fundamentals,  
detailed examples,  
and comprehensive  
coverage of models  
and applications,  
this is an excellent***



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***text for upper-level undergraduate or graduate students, or for the practicing engineer who needs to develop an understanding of propagation phenomena. This text should serve as an introduction to the application of***

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**electromagnetics**

***EM, following an  
initial course in  
basic EM theory. A  
particular feature of  
the book is that it  
examines time  
domain rather than  
frequency domain  
methods in depth.;  
This book is  
intended for  
advanced  
undergraduate and***

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**graduates in  
electrical and  
electronic  
engineering.**

**Research and  
practitioners in  
electromagnetics in  
electrical and  
electronic  
engineering and  
physics.**

**Analysis and  
Modeling of Radio  
Wave Propagation**

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***Radiowave***

***Propagation and***

***Smart Antennas for***

***Wireless***

***Communications***

***Module***

***10-Introduction to***

***Wave Propagation,***

***Transmission Lines,***

***and Antennas***

***Antennas and***

***Radiowave***

***Propagation***

***An important***

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Wave Propagation  
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*resource that  
examines the  
physical aspects  
of wireless  
communications  
based on  
mathematical and  
physical evidence  
The Physics and  
Mathematics of  
Electromagnetic  
Wave Propagation*

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Wave Propagation  
in Cellular  
By K D Prasad

*Wireless Communication describes the electromagnetic principles for designing a cellular wireless system and includes the subtle electromagnetic*

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*principles that are often overlooked in designing such a system. This important text explores both the physics and mathematical concepts used in deploying antennas for transmission and*

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*reception of  
electromagnetic  
signals and  
examines how to  
select the proper  
methodology from  
a wide range of  
scenarios. In this  
much-needed  
guide, the  
authors—noted  
experts in the*



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*field—explore the principle of electromagnetics as developed through the Maxwellian principles and describe the properties of an antenna in the frequency domain. The text also*

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*includes a review  
of the  
characterization of  
propagation path  
loss in a cellular  
wireless  
environment and  
examines  
ultrawideband  
antennas and the  
mechanisms of  
broadband*

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*transmission of  
both power and  
information. This  
important  
resource: Includes  
a discussion of the  
shortcomings of a  
MIMO system from  
both theoretical  
and practical  
aspects  
Demonstrates*

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*how to deploy  
base station  
antennas with  
better efficiency  
Validates the  
principle and the  
theoretical  
analysis of  
electromagnetic  
propagation in  
cellular wireless  
communication*

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*Contains results of experiments that are solidly grounded in mathematics and physics Written for engineers, researchers, and educators who are or plan to work in the field, The Physics and*

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*Mathematics of  
Electromagnetic  
Wave Propagation  
in Cellular  
Wireless Communi-  
cation offers an  
essential resource  
for understanding  
the principles  
underpinning  
wireless  
communications.*

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*Substrate-  
Integrated  
Millimeter-Wave  
Antennas for Next-  
Generation  
Communication  
and Radar  
Systems The first  
and only  
comprehensive  
text on substrate-  
integrated mmW*

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*antenna  
technology, state-  
of-the-art antenna  
design, and  
emerging wireless  
applications Subst  
rate-Integrated  
Millimeter-Wave  
Antennas for Next-  
Generation  
Communication  
and Radar*



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Systems  
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*elaborates the most important topics related to revolutionary millimeter-wave (mmW) technology. Following a clear description of fundamental concepts including*

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substrate-  
integrated

waveguides and  
loss analysis, the  
text treats key  
design methods,  
prototyping  
techniques, and  
experimental  
setup and testing.  
The authors also  
highlight

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*applications of  
mmW antennas in  
5G wireless  
communication  
and next-  
generation radar  
systems. Readers  
are prepared to  
put techniques  
into practice  
through practical  
discussions of how*

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*to set up testing  
for impedance  
matching,  
radiation patterns,  
gain from 24GHz  
up to 325 GHz,  
and more. This  
book will bring  
readers state-of-  
the-art designs  
and recent  
progress in substr*

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*ate-integrated  
mmW antennas  
for emerging  
wireless  
applications. Substrate-Integrated  
Millimeter-Wave  
Antennas for Next-  
Generation  
Communication  
and Radar  
Systems is the*

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*first comprehensive text on the topic, allowing readers to quickly master mmW technology. This book: Introduces basic concepts such as metamaterials Huygens's surface, zero-*

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index structures,  
By K. D. Prasad  
and pattern

synthesis

Describes

prototyping in the  
form of fabrication  
based on printed-  
circuit-board, low-  
temperature-co-  
fired-ceramic and  
micromachining

Explores

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By K D Prasad

*applications for  
next-generation  
radar and imaging  
systems such as  
24-GHz and  
77-GHz vehicular  
radar systems  
Elaborates design  
methods including  
waveguide-based  
feeding network,  
three-dimensional*



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*feeding structure, dielectric loaded aperture antenna element, and low-sidelobe synthesis*  
*The mmW is one of today's most important emerging technologies. This book provides graduate*

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*students, researchers, and engineers with the knowledge they need to deploy mmW systems and develop new antenna designs with low cost, low loss, and low complexity.*

*In the offered*

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*book the  
fundamentals of  
electromagnetic  
fields and waves  
are discussed  
based on the  
great Maxwell  
equations. The  
book is conceived  
as a textbook for  
serious technical  
and classical*

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*universities in the  
considered  
themes.*

*Nevertheless, it  
can be used, of  
course, as the  
reference book for  
wide group of  
engineers,  
researches and  
practical experts.  
Material of this*

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*book is divided into four main parts connected between them. The first part (Fundamental of Electrodynamics) is devoted to explanation of Maxwell equations and methods of its solutions. Besides*

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*classical interpretation the generalized equations are discussed, which take into consideration the scalar magnetic fields. New approaches allow description of so-called longitudinal*

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*electromagnetic waves, which have the absolutely non-standard propagation properties, and permit to explain various electrodynamics paradoxes, which cannot be*

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*explained in  
another way. The  
main  
characteristics of  
wave processes in  
the free space and  
in transmission  
lines (feeders) are  
described. The  
second part  
(Radio Wave  
Propagation)*



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*investigates the obvious patterns of diffraction and interference phenomena at radio wave propagation for the obstacle presence in the propagation track, which is typical for all practical*

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*situations. Radio  
wave propagation  
of various  
frequency ranges  
is fulfilled  
separately taking  
into consideration  
the specific  
features of  
reflections from  
the atmosphere  
parts, attenuation*

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*in different media,  
types of  
propagating  
waves, multipath  
effects, diffraction  
and non-standard  
conditions of  
obstacle  
overcoming  
including non-  
usual ways of  
atmosphere ducts.*

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*The third part is devoted to description of various types and antennas, beginning from simplest (vibrators) and ending by complicate adaptive antenna arrays.*

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*Description is fulfilled on the reviewing level with many obvious figures, not to rely on strict mathematical methods, but rather on the concept level. Fourth part includes*

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*description of UHF devices, which are the elements' base of UHF devices including surface and bulk integrated UHF circuits. These results have in many aspects the pioneer character and they are not*

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widely known to  
experts.

*Distinctive feature  
of the offered  
book is sufficiently  
simplifies  
description of the  
very complicated  
electrodynamics  
problems  
available for the  
modern students*

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*and for young  
engineers. Of  
course, it is  
impossible to deal  
without  
mathematics in  
theses areas but  
required  
mathematics can  
be replaced by the  
many patterns,  
which give the*



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*chance to  
understand  
problems and to  
determine the  
complex  
questions. Sample  
Chapter(s)*

*Chapter1:*

**GENERAL  
DEFINITIONS AND  
RELATIONS OF EL  
ECTRODYNAMICS**

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(498 KB) Contents:  
By K. D. Prasad

*FRONT*

*MATTER CHAPTER*

*1. GENERAL*

*DEFINITIONS AND*

*RELATIONS OF EL*

*ECTRODYNAMICSC*

*HAPTER 2. ELECTR*

*OMAGNETIC*

*FIELDS AND*

*WAVES CHAPTER*

*3. MAIN PHYSICAL*

**PHENOMENA AT  
RADIO WAVES PR  
OPAGATIONCHAPT  
ER 4.**

**PROPAGATION OF  
RADIO WAVES OF  
DIFFERENT  
RANGES AND ITS  
APPLICATION  
AREASCHAPTER 5.  
PRINCIPAL  
CHARACTERISTICS**

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OF ANTENNAS  
CHAPTER 6.  
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ANTENNAS OF  
DECIMILLIMETER,  
MILLIMETER AND  
CENTIMETER  
WAVES  
CHAPTER  
7. ANTENNAS OF  
DECIMETER,  
METER AND  
DECAMETER  
WAVES  
CHAPTER

8. ANTENNAS OF  
HECTOMETER,  
KILOMETER  
MYRIAMETER  
WAVESCHAPTER  
9. ANTENNAS FOR  
TV, RADIO RELAY  
AND SPACE  
COMMUNICATION  
LINESCHAPTER 10.  
ELECTROMAGNETI  
C COMPATIBILITY

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OF RADIO  
ENGINEERING  
SYSTEMS.

ANTENNAS AND  
THE PROBLEM OF  
ITS MINIATURIZATI  
ON CHAPTER 11.

MAIN  
COMPONENTS OF  
THE ELEMENT  
BASE OF  
ANTENNA-FEEDER

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**ENGINEERINGCHA  
PTER 12. BASE  
ELEMENTS AND  
FUNCTIONAL  
UNITS OF  
ANTENNA-  
FEEDER ENGINEER  
INGBACK MATTER**

*Readership: The  
book is conceived  
as a textbook for  
serious technical*

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*and classical universities in the considered themes.*

*Nevertheless, it can be used, of course, as the reference book for wide group of engineers, researches and practical experts.*



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*Understanding of  
Electrodynamics, Radio Wave*

*Propagation and  
Antennas*

*Volume*

*7-Antennas and  
Wave Propagation*

*NAVEDTRA 14092*

*Antennas and*

*Wave Propagation  
Theory of*

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Wave Propagation  
*Electromagnetic  
Wave Propagation*  
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Aimed at a single-semester course on antennas at the undergraduate level, *Antennas and Wave Propagation* provides a lucid explanation of the fundamentals of

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antennas and propagation. This student-friendly text also includes simple design procedures along with a large number of examples and exercises.

This book is designed for the

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final year students  
in electronics and  
communication  
and for the first  
year post graduate  
students in Digital  
Communication  
and allied  
subjects. This  
compact and  
comprehensive  
text fulfils the long

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felt need for a  
suitable text book  
in the area of  
“ Antenna and  
wave  
Propagation ” . It is  
written as per the  
revised syllabus of  
Rajasthan  
Technical  
University (RTU),  
Kota. It covers the

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topics, of  
fundamentals of  
antenna, types of  
antenna, antenna  
arrays, radio  
propagation  
modes, with basics  
of IE3D software  
and advance  
antenna topics.  
This well  
organized text lays

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emphasis on all  
the modes of  
propagation and  
practical aspects  
of antenna, with  
worked out  
examples & further  
previous year  
solved paper are  
included topic  
wise, which would  
be of considerable

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assistance to the  
reader. This  
comprehensive  
book covering all  
aspects of antenna  
and wave  
propagations,  
should prove to be  
an invaluable  
asset to both  
students &  
professionals.



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Features:  
According to the  
syllabus  
prescribed by  
Rajasthan  
Technical  
University (RTU),  
Kota. Including  
previous year's  
university papers.  
Precise definitions  
and clear

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exposure of  
fundamental  
concepts. Simple  
and easy  
explanation of the  
topics along with  
well labelled  
diagrams. Step by  
step procedure is  
followed for  
explaining the  
topics. Detailed

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coverage of  
advance antennas,  
helpful for the post  
graduation  
students. The  
recent applications  
of antenna are  
also summarized  
here again proving  
fruitful for the  
M.Tech. Students.  
IE3D software

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basic is been  
included for the  
purpose of  
dissertation for M.  
Tech. Students.  
Ideally suitable for  
self study.  
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