

# 《电动力学、电波传播与天线研究》

## 图书基本信息

书名：《电动力学、电波传播与天线研究》

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## 内容概要

In the offered 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 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 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 classical interpretation the generalized equations are discussed, which take into consideration the scalar magnetic fields. New approaches allow description of so-called longitudinal electromagnetic waves, which have the absolutely non-standard propagation properties, and permit to explain various electrodynamics paradoxes, which cannot be 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) 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 situations. Radio wave propagation of various frequency ranges is fulfilled separately taking into consideration the specific features of reflections from the atmosphere parts, attenuation in different media, types of propagating waves, multipath effects, diffraction and non-standard conditions of obstacle overcoming including non-usual ways of atmosphere ducts.

The third part is devoted to description of various types and antennas, beginning from simplest (vibrators) and ending by complicate adaptive antenna arrays. 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 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 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 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 chance to understand problems and to determine the complex questions.

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