

Foreword

The book is meant primarily for physicists, but it will also appeal to workers in chemistry, biology, medicine, and related fields. It is written by Vladimir N. Binhi, a well-known expert in magnetobiology and a member of the American Bioelectromagnetics Society.

Electromagnetobiology is a fast-developing field of research, its practical and environmental aspects being a topic of ever-increasing number of books. At the same time, physically, the biological effects of weak magnetic fields are still regarded as a paradox. The book comes to grips with that problem and fills in a theoretical gap. It reviews and analyzes the experimental evidence that yields some insights into the primary physical processes of magnetoreception and the frequency and amplitude spectra of the action of weak magnetic fields. Also, the book reviews the available hypothetical mechanisms for that action.

The methodology used in the book enables any physical idea to be quickly

assessed in terms of its value for magnetobiology. The author proposes a unified foundation to account for the biological effects of magnetic fields. Of especial interest is his hypothesis of the interference of quantum states of ions and molecules put forth to explain the paradoxes of the non-thermal action of electromagnetic fields.

Binhi draws on fundamental physical principles to derive a reasonable model for the interaction of electromagnetic fields with biological systems. The model agrees well with experiment and is essentially a thorough formulation of this interaction problem. The theory awaits elaboration, a fact that is bound to attract to that field new workers to whom the book could be recommended as a proper introduction.

The subject of the book could also be referred to as magnetobiological spectroscopy, in which data on physical processes in biophysical structures are derived by physical as well as biological means. It is safe to say that a new field, magnetobiology, has made its appearance in theoretical biophysics. This field still continues to cause much discussion, but it calls for more sophisticated studies to be carried out using rigorous mathematical and physical tools.

A. M. Prokhorov
member of the Russian Academy of Sciences
winner of the Nobel Prize for Physics

A handwritten signature in black ink, appearing to read 'A. M. Prokhorov', written in a cursive style.