ELECTROMAGNETIC WAVES PROPAGATION IN HETEROGENEOUS MEDIUM AND PROBLEM OF VISUALIZATION

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ABSTRACT: In chapter 2, [1] consistent physic-mathematical model of propagation of an electromagnetic wave in a heterogeneous medium is constructed using the generalized wave equation and the Dirichlet theorem. Twelve conditions at the interfaces of adjacent media are obtained and justified without using a surface charge and surface current in explicit from. The conditions are fulfilled automatically in each section of the heterogeneous medium and are conjugate, which make it possible to use through-counting schemes for calculations. The effect of concentration of "medium-frequency" waves with a length of the order of hundreds of meters at the fractures and wedges of domains of size 1-3 μm is established. Numerical calculations of the total electromagnetic energy on the wedges of domains are obtained. It is shown that the energy density in the region of wedges is maximum and in some cases may exert an influence on the motion, sinks, and the source of dislocations and vacancies and, in the final run, improve the near-surface layer of glass due to the "micromagnetoplastic" effect. The results of these calculations are of special importance for medicine, in particular, when microwaves are used in the therapy of various diseases. For a small, on the average, permissible level of electromagnetic irradiation, the concentration of electromagnetic energy in internal angular structures of a human body (cells, membranes, neurons, interlacements of vessels, etc) is possible.

References

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