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BOUNDARY CONDITIONS FOR MATHEMATICAL SIMULATION OF THE ELECTROMAGNETIC FIELD INSIDE AND OUTSIDE OF THE DISCHARGE CHAMBER OF HIGH-VOLTAGE ELECTRO-HYDRAULIC INSTALLATION

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Abstract

Features of the defining of boundary conditions for mathematical simulation of electromagnetic field (EMF) of high-voltage electro-hydraulic installation in final volume of computational domain outside of the discharge chamber are determined. Their use in the calculation of EMF inside and outside of discharge chamber allows to obtain the field distribution, which is equivalent to the distribution of EMF when using the exact boundary conditions at infinity - the error is not more than 5%. The mathematical model and algorithm for solving the obtained system of equations based on numerical methods are developed. Verification of the model and the algorithm is executed on the tasks that admit exact solutions. References 20, figures 4.

Key words: electrical discharge, capacitor, discharge channel in the water, the mathematical model, electromagnetic field, electro-hydraulic installation, boundary conditions.

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