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MODELING OF TRANSIENTS IN A DISCHARGE-PULSE SYSTEM FOR PROCESSING GRANULATED CONDUCTIVE MEDIA USING A REFINED DEPENDENCE OF THEIR RESISTANCE ON TIME

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Authors

N.A. Shydlovska*, **S.M. Zakharchenko****, **O.P. Cherkaskyi*****

Institute of Electrodynamics National Academy of Sciences of Ukraine,
pr. Peremohy, 56, Kyiv, 03057, Ukraine,

e-mail: shydlovska@ied.org.ua, snzakhar@ukr.net, cherkassky_a@ukr.net

* ORCID ID : <http://orcid.org/0000-0002-9907-7416>

** ORCID ID : <http://orcid.org/0000-0002-8597-8045>

*** ORCID ID : <http://orcid.org/0000-0001-5353-1022>

Abstract

The time dependences of the resistance of plasma-erosive load are investigated. For the first time, two new characteristic area of the first mode of this dependence were revealed. As a result of their analysis, the phenomenon of re-appearance of streamer and leader plasma channels after the disappearance of most of the previously formed plasma channels has been substantiated. Taking into account two new characteristic area of the first mode, the dependence of the resistance of the plasma-erosive load on time, its refined parametric model was created. The values of the parameters of this model that are optimal by the criteria of the three main parameters of the residual of the approximation are found. Functions that approximate the dependence of these parameters on the amplitude of the voltage pulses applied to the load are proposed and the optimal values of their coefficients are found. In the

Mathlab Simulink software package a model of a discharge-pulse system with a refined parametric model of plasma-erosive load was created and transients in it were calculated. An assessment is made of the adequacy of transient simulation compared with real processes. References 18, figures 4, tables 4.

Key words: plasma-erosive load, parametric model, discharge-pulse system, transients, adequacy.

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