

Reconfiguration Control of the Ground Automatic Control Complex of Spacecraft Based on Neural Network Technologies and AI Elements

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Abstract. The article considers the problematic issues of control of direct reconfiguration of the ground automatic control complex of spacecraft.

It is shown that main properties affecting control of the reconfiguration are controllability and observability. The proposed solution to increase the controllability and observability on base of neural network technologies are given. The necessity of creating a neural network complex to control the reconfiguration of the ground automatic control complex of spacecraft comprising an input, output, and neural network layer with four neural subnetworks having two circuits: controllability and observability is proposed.

The major advantage of this approach is using the application of self-trained algorithms of the control configuration of the ground automatic control complex of spacecraft and a possibility to create a uniform information field of dynamic contours of the control of spacecraft and carrying out the measurements.

Keywords: ground automatic control complex, spacecraft, neural algorithm, artificial intelligence, controllability, observability