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SOFTWARE MODELING OF STOCHASTIC TEMPERATURE FIELDS IN STF-ELECTRON MOD TECHNICAL SYSTEMS

*P.I. Kandalov*¹, Research Associate, petrki87@gmail.ru

¹Center of Visualization and Satellite Information Technologies SRISA, Nakhimovsky Ave. 36/1, Moscow, 117218, Russian Federation

Abstract. The article presents the software package “STF-ElectronMod” to simulate a steady-state stochastic 3D temperature fields in technical systems Experience has shown that the actual temperature fields of technical systems have uncertainty interval nature. This is due to the interval factors determining the thermal regime of the technical system. These factors include: the design parameters of technical systems with statistical technological manufacture spread; factors arising in the operation of technical systems (power consumption, heat flows, internal environment parameters); environmental factors (temperature, medium, refrigerant, flows velocity, etc.). However, now modeling of temperature fields of technical systems is being conducted under the assumption of determinacy. This means that all thermal condition parameters are considered accurately known This article describes a structure of the designed software system STF-ElectronMod for modelling of interval stochastic temperature fields in technical systems under uncertainty of input determining data. The method and algorithm are based on the author's developments according to a matrix-topological method, the software complex three-dimensional deterministic modeling of temperature fields of technical systems, as well as Monte-Carlo method. The application of the method and algorithm for modeling interval stochastic temperature fields is considered on the example of a complex electronic system.

Keywords: software, mathematical modeling, temperature fields, stochastic, interval.

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