

REVIEW OF SOME RESULTS AND RESEARCH PROBLEMS IN MATHEMATICAL MODELING OF BRAIN MECHANISMS

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In the proposer talk the results of research for brain processes and mental nature diseases these problems are considered from the point of view of systems analysis and mathematical modeling. Artificial neural networks, cellular automata, differential and difference equations had been proposed. The possibilities of design of algorithms for considering such phenomena are described. Some possibilities of the practical use of such algorithms are discussed. Specific features are exposed, on explaining and use of which in the algorithms of prognosing it is necessary to turn the special attention. Among them it is necessary to select high-frequency oscillations and micro-events in cells (neurons) for sudden death phenomena. The systems analysis of architecture, dynamics and desirable structure of models is conducted for processes at different levels of hierarchy into the brain. The hierarchical organization of brain architecture and corresponding hierarchical models are considered. Corresponding concepts of information flows and consciousness are analyzed.