Methods of direct search in hybrid algorithms of computing diagnostics of hydromechanical systems

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The article considers problems of computing diagnostics of hydromechanical systems. In the developed mathematical models of the studied objects we used indirect diagnostic information which contained in the spectra of fluctuations of objects registered with the regular systems. We formulated inverse spectral problem, in the solution of which we implemented optimization approach. It was assumed that private criteria were continuous, not everywhere differentiable multiextreme functions. Search of global decisions was carried out using a new hybrid algorithms integrating stochastic algorithm of scanning of variables space and determined methods of direct local search*. Numerical examples of model diagnosing of the heat carrier phase structure and of nuclear reactor plant equipment are given.*

Keywords*: computer diagnostics, inverse problem, criterion function, global optimization, the Metropolis algorithm, regularization, hybrid algorithm.*

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