Study into the efficiency of stochastic optimization methods by the expamle of a multiphase equation of state for aluminum

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The paper is devoted to the study of two stochastic methods of multivariable function optimization, specifically, the real genetic algorithm and the particle swarm method. Parametric analysis was performed and recommendations were formulated concerning the choice of internal parameters for these methods. The root-mean-square deviation of calculated and "experimental" thermodynamic quantities was taken as the objective function of optimization. Here "experimental" values are actually results of a calculation with the known parameters of a multiphase equation of state of aluminum. It is shown in what these methods are advantageous and disadvantageous when applied to EOS parametrization.