

GAUSS APPROXIMATION IN THE OPTIMIZATION PROBLEM OF THE MINORITY GAME MODEL

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S u m m a r y

The optimization problem of the well-known minority game model is studied by methods of statistical physics. The problem is reduced to the study of the ground state of some effective system with continuous spin described by a replica Hamiltonian with random parameters. With the use of the central limit theorem of probability theory, the representations of the distribution function for parameters of the Hamiltonian are obtained, and the transition to the Gauss distribution in the case of large P is realized. Within approximations 1RSB and 2RSB in the replica method, the dependence of the minimum of the quantity under study on the parameter α is determined. It is shown that, in the region of applicability, the proposed method gives a less value of the minimum than that obtained in the cited works.