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Optimization of the Reliability in Redundant System

Kimio HOSONO*

The problem treated in this paper is to maximize the reliability of the series-parallel system by means of redundant components subject to a cost constraint.

If the family of costs and corresponding maximum system reliabilities (called a dominating sequence) is obtained, then the optimal solution of any given particular problem must be a member of this family. Thus the purpose of this paper is to generate the dominating sequence.

Since two kinds of redundancies (standby and parallel redundancy) are considered, stage reliability which is necessary to obtain a system reliability is calculated for both cases in chapter 2. In chapter 3 three kinds of procedures are described to seek the dominating sequence, and in chapter 4 the sequences are obtained for two examples.

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