Optimal Maintenance Policies Under Different Operational Schedules

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Abstract—In the reliability literature, maintenance time is usually ignored during the optimization of maintenance policies. In some scenarios, costs due to system failures may vary with time, and the ignorance of maintenance time will lead to unrealistic results. This paper develops maintenance policies for such situations where the system under study operates iteratively at two successive states: up or down. The costs due to system failure at the up state consist of both business losses & maintenance costs, whereas those at the down state only include maintenance costs. We consider three models: Model A, B, and C:

- Model A makes only corrective maintenance (CM).
- Model B performs imperfect preventive maintenance (PM) sequentially, and CM.
- Model C executes PM periodically, and CM; this PM can restore the system as good as the state just after the latest CM.

The CM in this paper is imperfect repair. Finally, the impact of these maintenance policies is illustrated through numerical examples.

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