

论文

## ASYMPTOTIC PROPERTY OF THE TIME-DEPENDENT SOLUTION OF A RELIABILITY MODEL

Geni Gupur(1), GUO Baozhu(2)

(1)College of Mathematics and Systems Science, Xinjiang University, Urumqi 830046, China;(2) Academy of Mathematics and Systems Science, Chinese Academy of Sciences, Beijing 100080, China

收稿日期 修回日期 网络版发布日期 接受日期

摘要 We discuss a transfer line consisting of a reliable

machine, an unreliable machine and a storage buffer. This transfer line can be described by a group of partial differential equations with integral boundary conditions. First we show that the operator corresponding to these equations generates a positive contraction  $C_0$ -semigroup  $T(t)$ , and prove that  $T(t)$  is a quasi-compact operator. Next we verify that  $0$  is an eigenvalue of this operator and its adjoint operator with geometric multiplicity one.

Last, by using the above results we obtain that the time-dependent solution of these equations converges strongly to their steady-state solution.

关键词 [C\\_0-semigroup](#), [quasi-compact operator](#),

分类号

## ASYMPTOTIC PROPERTY OF THE TIME-DEPENDENT SOLUTION OF A RELIABILITY MODEL

Geni Gupur(1), GUO Baozhu(2)

(1)College of Mathematics and Systems Science, Xinjiang University, Urumqi 830046, China;(2) Academy of Mathematics and Systems Science, Chinese Academy of Sciences, Beijing 100080, China

**Abstract** We discuss a transfer line consisting of a reliable machine, an unreliable machine and a storage buffer. This transfer line can be described by a group of partial differential equations with integral boundary conditions. First we show that the operator corresponding to these equations generates a positive contraction  $C_0$ -semigroup  $T(t)$ , and prove that  $T(t)$  is a quasi-compact operator. Next we verify that  $0$  is an eigenvalue of this operator and its adjoint operator with geometric multiplicity one. Last, by using the above results we obtain that the time-dependent solution of these equations converges strongly to their steady-state solution.

**Key words** [C\\_0-semigroup](#) [quasi-compact operator](#) [adjoint operator](#) [eigenvalue](#)

DOI:

### 扩展功能

#### 本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(0KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

#### 服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

#### 相关信息

- ▶ [本刊中 包含“C\\_0-semigroup, quasi-compact operator,”的 相关文章](#)
- ▶ [本文作者相关文章](#)

- [Geni Gupur](#)
- [GUO Baozhu](#)

