

论文

Volterra积分微分方程周期正解的一个新的存在性理论

万阿英, 林晓宁, 蒋达清

呼伦贝尔学院数学系, 东北师范大学数学系

摘要:

该文通过使用锥不动点定理,研究了一类非自治Volterra积分微分方程周期正解的一个新的存在性理论,把一般结果应用于几类具时滞的生物数学模型时,改进了一些已知结果,并得到了一些新的结果.

关键词: Volterra积分微分方程,存在性,周期正解,不动点定理

分类号:

34K20

A New Existence Theory for Positive Periodic Solutions to Volterra Integro differential Equations

MO A-Yang, LIN Xiao-Ning, JIANG Da-Qing

Abstract:

This paper deals with a new existence theory for positive periodic solutions to a kind of nonautonomous Volterra integro differential equations by employing a fixed point theorem in cones. Applying the general theorems established to several biomathematical models, the paper improves some previous results and obtains some new results.

Keywords: Volterra integro differential equation, Existence, Positive periodic solution, Fixed point theorem

收稿日期 修回日期 网络版发布日期

DOI:

基金项目:

国家自然科学基金(10171010)资助

通讯作者:

作者简介:

参考文献:

[1]Deimling K. Nonlinear Functional Analysis. New York: Springer Verlag, 1985

[2]Luo Jiaowan, Yu Jianshe. Global asymptotic stability of nonautonomous mathematical ecological equations with distributed deviating arguments. Acta Mathematica Sinica, 1998,41(4):1273-1282

[3]Krasnoselskii M A. Positive Solution of Operator Equation. Gorningen: Noordhoff, 1964

[4]Wang P, Liang M. The existence and behavior of periodic solution of Hematopoiesis model. Mathematica Applicata, 1995, 8(3): 434-439

[5]Wang P. Existence and global attractivity of periodic solution of integro differential equation in population dynamics. Acta Appl Math, 1996, 12(3): 427-434

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(325KB)
- ▶ [HTML全文]
- ▶ 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
- ▶ 引用本文
- ▶ Email Alert
- ▶ 文章反馈
- ▶ 浏览反馈信息

本文关键词相关文章

- ▶ Volterra积分微分方程,存在性,周期正解,不动点定理

本文作者相关文章

- ▶ 万阿英
- ▶ 林晓宁
- ▶ 蒋达清

PubMed

- ▶ Article by Mo, A. Y.
- ▶ Article by Lin, X. N.
- ▶ Article by Jiang, D. Q.

[6]Gurney W S C, Blythe S P, Nisbet R M. Nicholson's blowflies revisited. Nature, 1980,287(2): 17-20

[7]Gopalsamy K, Weng P. Global attractivity and level crossing in model of Hematopoiesis. Bulletin of the Institute of Mathematics, Academia Sinica, 1994, 22(3): 341-360

[8]Joseph W H So, Yu Jianshe. Global attractivity and uniformly persistence in Nicholson's blowflies. Differential Equation and Dynamics Systems, 1994, 2(3): 11-18

[9]Mackey M C, Glass L. Oscillations and chaos in physiological control systems. Sciences, 1987, 197(2): 287-289

[10]Yoshizawa T. Stability Theory by Liapunov Second Method. Japan: The Mathematical Society of Japan, 1966

[11]Lan K, Webb J L R. Positive solutions of semilinear differential equations with singularities. J Differential Equations, 1998, 148(3): 407-421

[12]Wan A Y, Jiang D Q. Existence of positive periodic solutions for functional differential equations. Kyushu Journal of Mathematics. 2002, 56(1): 193-202

[13]Jiang D Q, Wei J J. Existence of positive periodic solutions for Volterra integro-differential equations. Acta Mathematica Scientia, 2002, 21B(1): 553-560

本刊中的类似文章

文章评论 (请注意:本站实行文责自负, 请不要发表与学术无关的内容!评论内容不代表本站观点.)

反馈人	<input type="text"/>	邮箱地址	<input type="text"/>
反馈标题	<input type="text"/>	验证码	<input type="text"/> 7924