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非全局Lipschitz条件下随机延迟微分方程Euler方法的收敛性

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CONVERGENCE OF EULER METHODS FOR STOCHASTIC DELAY DIFFERENTIAL EQUATIONS UNDER NON-GLOBAL LIPSCHITZ CONDITIONS

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- 摘要
- 参考文献
- 相关文章

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摘要 大多数随机延迟微分方程数值解的结果是在全局Lipschitz条件下获得的. 许多延迟方程不满足全局Lipschitz条件, 研究非全局Lipschitz条件下的数值解的性质, 具有重要的意义. 本文证明了漂移系数满足单边Lipschitz条件和多项式增长条件, 扩散系数满足全局Lipschitz条件的一类随机延迟微分方程的Euler方法是(1/2)阶收敛的.

关键词: 随机延迟微分方程 Euler方法 单边Lipschitz条件 多项式增长条件

Abstract: Most of the existing results on the numerical solutions for the stochastic delay differential equations (SDDEs) are proved under the global Lipschitz conditions. However, there are many SDDEs that don't satisfy the global Lipschitz conditions. It is interesting to study the property of the numerical solutions for the SDDEs under the non-global Lipschitz conditions. In this paper, we prove that the Euler methods for SDDEs converge with the order (1/2) when the drift coefficient function satisfies the one-sided Lipschitz conditions and the polynomial growth conditions and the diffusion coefficient function satisfies the global Lipschitz conditions.

Key words: Stochastic delay differential equations Euler methods One-sided Lipschitz conditions Polynomial growth conditions

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