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一类具有交叉扩散的捕食模型非常数正解的存在性

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The Existence of Non-constant Positive Solutions for a Predator-prey Model with Cross-diffusion

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摘要 研究了一类具有扩散和交叉扩散项的Holling-Tanner捕食-食饵模型. 首先利用最大值原理和Harnack不等式给出正解的先验估计, 进一步利用度理论得到非常数正解的存在性与不存在性, 从而给出非常数正解存在的充分条件.

关键词: 交叉扩散   捕食-食饵   度理论

Abstract: This paper will discuss a Holling-Tanner predator-prey ecological model with diffusion and cross-diffusion. By means of maximum principle and Harnack inequality, a priori estimates are first established. Furthermore, the degree theory is utilized to obtain the existence and non-existence of non-constant positive solutions. The results indicate that non-constant positive solutions are created under some conditions.

Key words: cross-diffusion   predator-prey   degree theory

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