

论文

各向异性网格上抛物方程全离散格式的高精度分析

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摘要:

该文的主要目的是在各向异性网格下, 利用双二次有限元逼近对抛物方程全离散格式进行了高精度分析, 通过积分恒等式技巧以及一些新的技术得到了超逼近结果.

关键词: 高精度分析 抛物方程 双二次元 各向异性网格

分类号:

65N30; 65N15

High Accuracy Analysis of Fully Discrete Galerkin Approximations for Parabolic Equations on Anisotropic Meshes

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Abstract:

The aim of this paper is to study the higher order accuracy analysis of fully discrete Galerkin approximations to parabolic equations by biquadratic element under anisotropic meshes. Through the integral identity techniques and some novel approaches the superclose results are obtained.

Keywords: High accuracy Parabolic equation Biquadratic element Anisotropic meshes

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参考文献:

[1] Liu X Q. High accuracy methods for fully discrete Galerkin approximation of parabolic equations. Beijing Mathematics, 1995, 1: 31--36

[2] Lin Q, Pan J H.  $O(h^4)$  Superconvergence for Biquadratic Elements in Parabolic Problems. Hong Kong: Great Wall Culture Publish Co, 1991: 217--229

[3] Thomee V, Xu J C, Zhang N Y. Superconvergence of the gradient in piecewise linear finite element approximation to a parabolic problem. SIAM J Numer Anal, 1989, 26: 553--573

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[4] 林群, 严宁宁. 高效有限元构造与分析. 保定: 河北大学出版社, 1996

[5] Chen S C, Shi D Y, Zhao Y C. Anisotropic interpolation and quasi-Wilson element for narrow quadrilateral meshes. IMA J Numer Anal, 2004, 24: 77--95

[6] Apel T, Dobrowolski M. Anisotropic interpolation with application to the finite element method. Computing, 1992, 47: 277--293

[7] Zenisek A, Vanmaele M. The interpolation theorem for narrow quadrilateral isoparametric finite elements. Numer Math, 1995, 72: 123--141

[8] Ciarlet P G. The Finite Element Method for Elliptic Problem. Amsterdam: North-Holland, 1978

[9] Thomee V. Galerkin Finite Element Methods for Parabolic Problems. New York: Springer-Verlag, 2003

[10] Shi D Y, Zhu H Q. The superconvergence analysis of an anisotropic element. Journal of System Science and Complexity, 2005, 18: 478--487

[11] Shi D Y, Mao S P, Chen S C. An anisotropic nonconforming finite element with some superconvergence results. J Comp Math, 2005, 23: 261--274

[12] 石东洋, 张熠然. 非正常Stokes问题的矩形Crouzeix-Raviart型各向异性非协调元变网格方法. 数学物理学报, 2006, 26(5): 659--670

[13] Shi D Y, Chen S C. Convergence analysis of a membrane nonconforming element on anisotropic meshes. J Comp Math, 2005, 23: 373--382

[14] Chen S C, Zhao Y C, Shi D Y. Anisotropic interpolations with application to nonconforming elements. Appl Numer Math, 2004, 49: 135--152

[15] Shi D Y, Mao S P, Chen S C. A class of anisotropic Crouzeix-Raviart type finite element approximations to Signorini variational inequality problem. Chinese J of Numer Math and Appl, 2005, 27: 69--78

[16] Shi D Y, Mao S P, Chen S C. A locking-free anisotropic nonconforming finite element for planar linear elasticity. Acta Math Sci, 2007, 27B(1): 193--202

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