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二维可压无粘流的自适应流量修正有限元解

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FINITE ELEMENT FLUX CORRECTED TRANSPORT (FEM-FCT) SOLUTION OF TWO-DIMENSIONAL EULER EQUATIONS ON AN ADAPTIVE TRIANGULAR MESH

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摘要

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摘要 从非定常 Euler 方程组出发, 采用非结构三角形网格, 研究二维无粘流动问题的自适应流量修正有限元解。将 FEM-FCT 与网格自适应相结合计算了 NACA 0012 翼型的三个算例。计算结果与实验及其他计算结果比较, 亚音速和超音速绕流符合很好; 跨音速绕流情况存在一些差别。

关键词: 可压缩流 无粘流 欧拉运动方程 有限元法

Abstract: The solution of compressible flow on unstructured triangular grids in two dimensions is considered. FEM-FCT for the Euler equations are combined with an adaptive mesh regeneration procedure and employed in solution of three examples. Comparisons with experiment data or other computational result show good agreement for the subsonic and supersonic flow around NACA0012 airfoil. However, the location of shock-wave has some difference for the transonic flow.

Keywords: compressible flow inviscid flow Euler equations of motion finite element method

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