随时间发展的三维混合层流场的研究

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摘要　　构造了三维混合层流场用离散涡丝描述的计算模型并进行了数值模拟. 给出了流场的涡结构以及不同剪切率、不同扰劝强度下涡结构的特征，得到了流场中的平均速度、动量厚度. 由计算被动粒子显示了流场螺旋涡结构的图像. 做了相应的流动显示实验研究，所得结果与计算结果非常相近. 本研究为了解该流场并由此进行流场控制提供了依据.

关键词　　三维混合层　离散涡丝　数值模拟　流动显示

分类号

RZSEARCH ON THE THREE-DIMENSIONAL MIXING LAYER DEVELOPING WITH TIME

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Abstract

A model of computation for three-dimensional mixing layers described by discrete vortex filaments is built. Based on this model, the three--dimensional mixing layers are computed numerically. The vortex structure, distribution of mean velocity, momentum thickness and mean square values of velocities at different times are given. The effects of shear rate, intensity of disturbance on flows are analysed. Some computed results are compared with related experimental ones, showing a good agreement. The results g...

Key words　three-dimensional mixing layer　discrete vortex filaments　numerical simulation visualization

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