综述评论

扩散抛物化Navier-Stokes方程数值解法评述

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摘要　　20世纪60年代末期在边界层理论基础上发展起来的各种简化Navier- Stokes (N-S)方程(统称为扩散抛物化N-S方程)及其算法，较为彻底地解决了无黏流及黏流的相互干扰问题，并为高雷诺数大型复杂黏性流场的数值模拟开辟了新的途径. 本文将系统地评述这一领域的主要成果，包括各种简化N-S模型的优缺点；数学奇性及正则化方法；代表性的数值解法以及最近几年的新进展.

NUMERICAL SOLUTIONS OF THE DIFFUSION PARABOLIZED NAVIER-STOKES EQUATIONS

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Abstract

In the late 1960's the different-type simplified Navier-Stokes models, or as are generally called, the diffusion parabolized N-S (DPNS) equations, and their computational methods developed from the Prandtl's boundary-layer theory have correctly included the viscous-inviscid flow interacting mechanism and opened a new approach for simulating large-scale complex flowfields. This paper reviews the related main results of this field, including advantages and drawbacks of different simplified Navier-Stokes models; mathematical characteristics and their marching regularization procedures of the DPNS equations; various representative numerical solutions and the applicability of the DPNS equations and finally the new generalized DPNS equations.

通讯作者

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