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Title: P a r a l l e l N u m e r i c a l S i m u l a t i o n o f S u p e r s o n i c M u l t i—p h a s e Fl o w WU Haiyan， SU N Mi ngbo， SHAO Yan， WANG Hongbo， Z HOU Ji n

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摘要： 为实现超声速多相流动的高效数值仿真，搭建了多机集群分布式MI MD 并行计算平台，并基于MPI 通信平台开发了计算多相流流场的并行计算程序。对并行计算中网格分区方法、区域网格交界处通信方法及 Euler 与Larange 坐标系间数据传递技术进行了研究。并进行了超声速燃烧多相流动算例的数值验证，比较了并行计算效率，证明了该多相流并行计算方法是高效可行的。

Abstract: For effective numerical si mulation of supersonic multi—phase flow，the parallel calculation program of multi— phase flow numerical si mulation was developed by the MPI transfer function database，and the PCcluster distri bution type system was established for MI MD parallel co mputation architecture．The method of grid partition，the course of grid sub—zone i nterface co mmunication，and the datatransfer bet ween Euler and Lagrange coordi nate syste m were stud—ied．Then a case of multi—phase supersonic co mbustion flow was conducted to numerical validate，and the efficiency of parallel co mputation was co mpared．Whichi ndicate the parallel numerical si mulation method for multi—phase flowis via— ble and effectively．

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