

Developer Guide of MCF (Multiscale Complex Fluids simulation)

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Abstract

1 Introduction

A code named multiscale complex fluids simulation (MCF) has been developed and is still being developed in Marco Ellero's Emmy Noether group at Prof. Adams' Chair of Aerodynamics, Technical University Munich. This article is created to facilitate the understanding and even further development of the code, which is written in Fortran 90 and uses a highly efficient parallel particle mesh (PPM)[1] library. The numerical algorithm of MCF is based on mesh free Lagrangian particle method, particularly smoothed particle hydrodynamics (SPH) and its extended version smoothed dissipative particle dynamics (SDPD).

References

- [1] I. F. Sbalzarini, J. H. Walther, M. Bergdorf, S. E. Hieber, E. M. Kotsalis, and P. Koumoutsakos. Ppm - a highly efficient parallel particle-mesh library for the simulation of continuum systems. *J. Comput. Phys.*, 215(2):566–588, 2006.