

國立中山大學應用數學系

學術演講

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講題：Moving particle methods: MPPM and CPM

時間：2014/05/22 (星期四) 15:30 ~ 16:30

地點：理學院四樓理 SC 4009-1 室

茶會：15:00 於理 SC 4010 室 (系辦公室)

摘要

We discuss two novel moving particle methods recently developed in NKMU: moving particle with pressure mesh, MPPM and characteristic particle method, CPM. Contrary to the common wisdom in the existing particle methods, the former, MPPM, is developed to solve incompressible flow by incorporating a stationary pressure mesh to handle flow continuity constraint. It is motivated by the understanding that pressure should be treated as a field variable rather than material one moving with flow trajectory. Efficient and accurate discretizations for flow equations can be consequently derived. The latter, CPM, can be employed to solve hyperbolic equation systems. Solution is traced by computational particles moving along the flow characteristic curves which will yield a multiple particle system. Special particles accommodating the Rankine-Hugoniot relations are introduced to resolve the shock structure. As a result, highly accurate simulations can be obtained.

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