CASTS TALKS

Special Program in Applied Mathematics and Applied Mechanics

Calculations of axisymmetric flow with moving particle method

2013 - 10 - 09 (Wed.)
15:00 - 18:00
308, Mathematics Research Center Building (ori. New Math. Bldg.)

This talk aims at introducing a newly developed moving particle method to solve the incompressible axisymmetric flow. Besides the particle moving strategy to deal with flow convection term, a complementary Eulerian mesh is inserted within the particle cloud to realize the pressure-related operators. Therefore, the computational particles can be merely treated as observation points rather than material ones to the enforcement of mass conservation constraint. Extension to solve axisymmetric problems becomes straightforward as long as the flow diffusion operator and symmetric boundary condition are appropriately resolved. Computations are carried out by solving some benchmark problems to validate the present formulation. Numerical results are scrutinized by comparison with available analytical, numerical or experimental data. It is shown that the proposed moving particle method (MPPM) can furnish reasonable simulations for incompressible axisymmetric flows.

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