

## Special Program in Applied Mathematics and Applied Mechanics

*Applications of Residual Double Average Method and Conservative  
Phase Field Method for Solving Incompressible Two Phase Flows on  
Collocated grids*

2014 - 04 - 23 (Wed.)

15:00 - 18:00

308, Mathematics Research Center Building (ori. New Math. Bldg.)

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In recent decades, a reliable CAE tool is more and more important for producing high quality product. With an appropriate CAE tool, it can find the defects easier, make the design better and reduce the cost and time. For the practical problems, how to efficient and accurate predict two phase flow is still a main issue for both academic and engineering area.

In this talk, an incompressible two phase flow solver on collocated grids is presented. The framework is constructed with three important aspects, respectively on eliminating the velocity-pressure decoupling, appropriate methodology for two phase flow and appropriate scheme for advection terms. The present framework not only provides accurate relax/time-independent velocity and pressure result but also predict precisely the free-surface profile. The analytical and experimental data were compared with the predicted results for the present solver to verify the accuracy and applicability. All predicted results have been shown to compare fairly well with the benchmark, experimental and other numerical results. It is expected that present framework could be a robust and reliable two-phase flow solver.

