The Hong Kong University of Science and Technology

Department of Mathematics

<u>Seminar on Scientific Computation</u>

Two-grid methods for semi-linear elliptic interface problems by immersed finite element methods

By

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<u>Abstract</u>

In this talk, three efficient two-grid algorithms are proposed and analyzed for semi-linear interface problems with discontinuous diffusion coefficients in two dimension. Because of the advantages of simple structure of Cartesian grids and the finite element formulation, we use immersed finite element discretization. To linearize the finite element method equations, two-grid algorithms based on some Newton iteration approach and residual-correction technique are applied. It is shown that the coarse space can be extremely coarse, and yet one can still achieve asymptotically optimal approximations as good as solving the original nonlinear problem on the fine mesh. As a result, solving such a large class of nonlinear equation will not be much more difficult than solving one linearized equation.

Date: *Tuesday, 04 December 2018*
Time: *3:00p.m.-4:00p.m.*
Venue: *Room 4582, Academic Building*
              (near Lifts 27 & 28), HKUST

All are welcome!