THE UNIVERSITY　　　　　　　　**OF HONG KONG**

Institute of Mathematical Research
Department of Mathematics

Analysis Seminar

Error estimates for diffusion equations on coated bodies and lifespan of effective boundary conditions

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Abstract

Imagine the scenario of a heat/diffusion equation on a body, which is surrounded by a thin layer whose diffusion property is drastically different from that on the body (suppose Dirichlet boundary condition is imposed on the outer boundary of the thin layer). To simplify the numerics and to be able to see the effects of the coating, in previous works we have found "effective boundary condition" which is imposed on the boundary of the uncoated body, resulting in a simpler "effective model" that approximates the original boundary value problem (the full model). I will talk about error estimate results from which we see how well the effective model approximates the original full model. It turns out that in some cases this approximation is not possible to be a good one for the entire time interval $(0, \infty)$; in these cases we give estimates for the time duration when the approximation is good—that time duration is what we call "lifespan of effective boundary condition".

Date:	April 18, 2018 (Wednesday)
Time:	4:30 – 5:30pm
Venue:	Room 210, Run Run Shaw Bldg., HKU

All are welcome