**Department of Mathematics**
**The Chinese University of Hong Kong**

數學系
香港中文大學

# Colloquium

# Adaptive Splitting Methods for Kawarada Equations in Combustion Applications

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Abstract: In this talk, we will take a quick look at some most frequently used, yet powerful, splitting strategies. Then an overview of some interesting issues involving the numerical solution of nonlinear Kawarada problems will be given. The singular reaction-diffusion partial differential equations discussed are for modeling thermal combustion processes, in particular when solid fuels are used. Adaptive splitting finite difference approximations of the underlying equations will be introduced. In addition to numerical analysis on the monotonicity, convergence and stability of the solution, we will talk about ideas of one of the latest exponential evolving grid strategy inspired by moving grid methods. The highly efficient computational procedures can be extended for solving similar singular problems raised from biophysics, oil pipeline decays or laser-materials interactions.

Date:     12 November 2015 (Thursday)
Time:     10:30 a.m. – 11:30 a.m.
Venue:    Room 222, Lady Shaw Building
          The Chinese University of Hong Kong, Shatin

*All are Welcome!*