

# 理論科學研究中心

Center for Advanced Study in Theoretical Sciences

● **講者：**潘從輝教授(University of Houston, USA)

● **講題：**A distributed Lagrange multiplier/fictitious domain method for simulating particles settling in viscoelastic fluids

● **摘要：** In this talk we present a numerical method for simulating particle settling in viscoelastic fluids. This methodology is a combination of a distributed Lagrange multiplier/fictitious domain method, an operator splitting technique, and finite element methods, being developed to solve numerically the Navier-Stokes equations for an incompressible viscoelastic fluid coupled with the Newton's laws for the particle motion and the constitutive equation of the conformation tensor.

Numerical results of two balls settling in a vertical channel with a square cross-section filled with a viscoelastic fluid of Oldroyd-B or FENE-CR types will be presented. Two initial configurations have been studied: two balls released side by side and one atop the other. For the side by side initial configuration, two balls may stay apart and interact periodically or form a vertical chain up to the blockage ratio, elasticity number and the two terminal speeds. For the initial configuration with one ball atop the other, we have obtained that either the trailing ball catches up the leading one to form a vertical chain or two balls separate with a stable final distance as observed experimentally in Boger fluids.

\*This is a joint work with Roland Glowinski (University of Houston) and Shang-Huan Chiu (New Jersey Institute of Technology)

● **時間：**2019 年 12 月 19 日 (星期四) · 15:30-17:00

● **地點：**臺大數學研究中心 103 室(原新數學館)

● **主持人：**張建成教授 (國立臺灣大學應用力學研究所)