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The Hong Kong University of Science and Technology

Department of Mathematics

Seminar on Applied Mathematics

On The Motion of Rigid Solid Particles in Visco-elastic Liquids

by

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Abstract

This lecture concerns the numerical simulation of the motion of rigid solid particles in a space region filled with an incompressible viscoelastic liquid. Two types of viscoelastic liquids will be considered, namely: (i) Oldroyd-B, and (ii) FENE-CR, a more realistic model (CR being for Chilcott & Rallison, 1988). The multi-physics features of these two-phase non-Newtonian flow problems made them natural candidates for solution methods based on operator-splitting, among other computational ingredients, such as well-suited finite element approximations. The results of numerical experiments will be presented, a particular attention being given to the simulation of particle chaining phenomena. When experimental data are available, the matching between numerical and laboratory experiments is quite remarkable.

Date: Friday, 9 August 2019

Time: 3:00p.m. – 4:00p.m.

Venue: Room 3472, Academic Building (Lifts 25-26), HKUST

All are welcome!