TIFR Centre for Interdisciplinary Sciences
21 Brundavan Colony, Narsingi, Hyderabad 500075

Seminar

Simulating dense suspensions of soft particulate flows

Shravan Veerapaneni

University of Michigan

Direct numerical simulations of vesicles, bubbles, and other soft-particle suspensions in arbitrary confined geometries is extremely challenging owing to the near-singular interaction forces, nonlinear interfacial forces and nonlocal hydrodynamics. In this talk, we will present some recent advances in computational algorithms for simulating such systems. Integral equation formulations for confined flows and mixtures of soft and rigid particles will be discussed. A new fast algorithm for accelerating the singular integral evaluations on the interfaces will be presented. Integrating semi-implicit time stepping schemes with re-parameterization and anti-aliasing techniques enables us to overcome numerical instabilities. We will review some of these computational components, which are essential for simulating large number of particles in dense flows.

Monday, June 2nd 2014

11:00 AM (Tea/Coffee at 10:45 AM)

Seminar Hall, TCIS