ICTS Postdoc Seminar

Title : Study of Flow in a Channel Network

Speaker : Sunil Bharadwaj (ICTS-TIFR, Bangalore)

Date : Monday, 18th January 2021

Time : 11:30 am (IST)

Abstract : Short of simulating the full Navier-Stokes equation in the entire domain, solving for a flow in a complicated channel network, consisting of bends and junctions, is not trivial. Simulation of flow in these networks incur huge computation costs, and are sometimes near-impossible to solve. In this study, we show that a channel network can be represented as elements of a graph. This in turn allows us to employ various tools of Graph theory in conjunction with Kirchhoff's circuit laws (here we use a neat trick to draw an analogy of the flow with an electrical circuit) to solve for the velocities in different arms of the channel network. This greatly reduces the computational complexity. We validate these results with simulations and discuss the advantages and disadvantages of such a technique.

I will also discuss briefly, DLMFD (Distributed Lagrange Multiplier / Fictitious Domain) method to simulate flows involving fluid-structure interaction. I will also highlight important results from another study involving jetting from the surface of a liquid when a column of liquid has a high-speed impact with the floor.

Venue : Please click on the below link to join the seminar

https://zoom.us/j/98442108200?pwd=ZzJZeFhrOEdEWUFJUGIrUThheDlTdz09

Meeting ID: 984 4210 8200
Passcode: 321764