FOSSEE, IIT Bombay
OpenFOAM Research Migration Project
April 22, 2022

# Effect of amplitude of walls on thermal and hydrodynamic characteristics of laminar flow through an asymmetric wavy channel

Abhishek Raghuvanshi
*Department of Mechanical Engineering, IIT Bombay*

## Synopsis

This research migration project aims to do numerical simulations of the forced convection of a laminar flow in asymmetric wavy channels under different flow conditions using `OpenFOAM-v2012`. The geometry and mesh were made using third-party meshing software due to being complex and then imported into OpenFOAM using the `fluentMeshtoFoam` utility. A steady-state, incompressible, laminar flow was validated with `buoyantBousinessqSimpleFoam` solver being used in the simulation. Various flow parameters (namely, Re, wave amplitudes, type of channel- *Linearly Incr. Ampl. Channel(LIAC), Linearly Decr. Ampl. (LDAC), Constant Ampl. (CAC)*) were studied and compared to find out the optimum wavy channel for heat transfer. The analysis executed by Sumit et. al. [1] using commercial CFD code Fluent was taken as a reference.

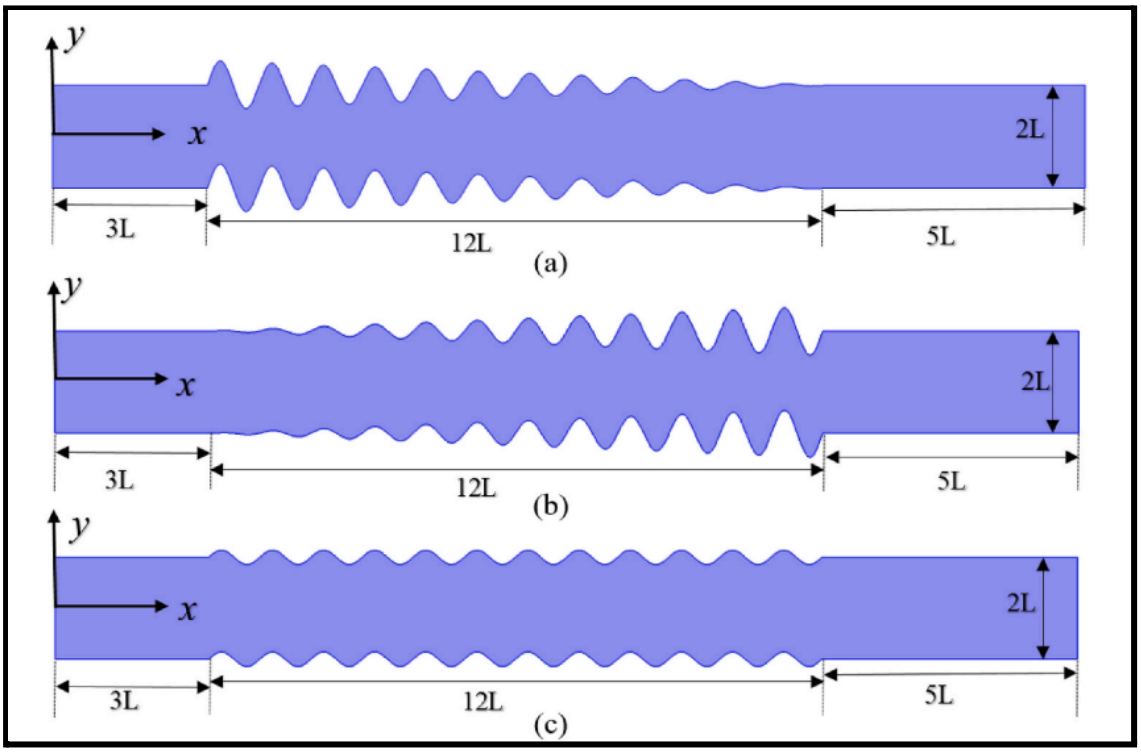


Figure 1: Geometry and Dimension