

35/2020



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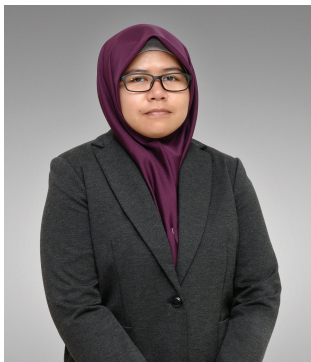
DATE : 30 OCTOBER 2020 | TIME : 3.15 PM

MEDIUM : VIDEO CONFERENCE (ZOOM)



Webinar ID: 957 0687 5533

Passcode: 410644



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**Topic : Simulating High Speed Flow using Flux Scheme with
Lattice-Boltzmann**

ABSTRACT

Simulating high speed flows are preferably done using finite volume methods of flux schemes due to their ability to capture the shock with physical properties being intact throughout the time integration. Despite this advantage, some notable schemes such as the Godunov-type methods are prone to produce numerical instabilities. Abolishing the instabilities unfortunately will also alter the physical properties at certain positions in space. Consequently, a method is proposed to scrutinize the motion of the high speed flow using Lattice-Boltzmann Method (LBM) especially at the shock. This method had been mainly used for incompressible fluid flow and about a decade ago, it was tested for compressible flow. Many researchers claimed to successfully simulate high speed flow over a blunt body without any issues. On the other hand, our scheme is only to use LBM where possible instabilities may emerge, hence, reducing the time calculation as well as preserving the physical behavior. The alliance of these methods is not without any challenges. Some examples for such challenges are simulation at very high Mach number, variations of specific heat ratio and multidimension with unstructured grid computation.



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