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The localized method of approximated particular solutions- a meshless approach for solving multidimensional in compressible Navier-Stokes equations

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This talk paper will focus on demonstrating that the localized method of Approximated Particular Solutions (LMAPS) is a stable, accurate and meshless numerical tool for simulating multidimensional incompressible viscous flow fields governed by the Navier-Stokes equations. Totally there are four numerical bench mark experiments conducted including interior and exterior flows: A two-dimensional lid-driven cavity flow problem, and a two-dimensional backward facing step problem. A further attempt to solve three-dimensional Navier-Stokes equations as the two-dimensional benchmark examples will be addressed and discussed as well. Throughout this talk, the LM APS has been tested by non-uniform point distribution, extremely narrow rectangular domain, internal flow, velocity or pressure driven flow and high velocity or pressure gradient, etc. All results are similar with results obtained by the finite element method (FEM) or other existing mesh- dependent methods such as finite difference method (FDM), FEM, finite volume method (FVM), etc. in the literature. And it is concluded that the LMAP S has high potential to be app lied to more complicate engineering applications as far as solving Navier-Stokes equations are concerned.

Biography

D L Young has completed his PhD from Cornell University and also did his Post-doctoral studies at Cornell University School of Engineering. He is now the Emeritus Professor of National Taiwan University after teaching for 34 years. He has published more than 158 papers in reputed journals and has been serving as an Editorial Board Member of several SCI journals.

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