



Lattice Boltzmann Method: Fundamentals and Engineering Applications with Computer Codes

A. A. Mohamad

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Lattice Boltzmann Method introduces the lattice Boltzmann method (LBM) for solving transport phenomena – flow, heat and mass transfer – in a systematic way. Providing explanatory computer codes throughout the book, the author guides readers through many practical examples, such as:

- flow in isothermal and non-isothermal lid driven cavities;
- flow over obstacles;
- forced flow through a heated channel;
- conjugate forced convection; and
- natural convection.

Diffusion and advection-diffusion equations are discussed with applications and examples, and complete computer codes accompany the coverage of single and multi-relaxation-time methods. Although the codes are written in FORTRAN, they can be easily translated to other languages, such as C++. The codes can also be extended with little effort to multi-phase and multi-physics, if the reader knows the physics of the problem.

Readers with some experience of advanced mathematics and physics will find *Lattice Boltzmann Method* a useful and easy-to-follow text. It has been written for those who are interested in learning and applying the LBM to engineering and industrial problems and it can also serve as a textbook for advanced undergraduate or graduate students who are studying computational transport phenomena.

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