Curriculum Vitae

Ahmad Reza Rahmati

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Education

Ph.D.: Isfahan University of Technology, Isfahan, Iran (2002-2010).
MSc: Isfahan University of Technology, Isfahan, Iran (1999-2002).
BSc: Isfahan University of Technology, Isfahan, Iran (1994-1999).

Areas of Interest

- Combustion modeling
- Turbulence modeling
- Parallel programming
- Modeling of Micro and nano scale fluid flows
- Modeling of natural convection heat transfer flows

Research Activities

Lattice Boltzmann method, Thermal LBM, CFD

Under graduate courses

- Heat transfer I and II
- Fuel and combustion

Graduate courses

- Radiation heat transfer

Publications

  a. Journal Papers

1. Rahmati, A. R., Ashrafizaadeh, M., and Shirani E., "Novel Hybrid Finite-Difference Thermal Lattice Boltzmann Models for Convective Flows", Heat Transfer Research, Vol. 40, No. 8, pp. 747-775, 2009.
2. Rahmati, A. R., and Ashrafizaadeh, M., "A Generalized Lattice Boltzmann Method for Three-Dimensional Incompressible Fluid Flow Simulation", J. Applied Fluid Mechanics, Vol. 2, pp. 71-96, 2009.
3. Rahmati, A. R., and Niazi, S., "Simulation Of Micro Flows Using A Lattice Boltzmann Method On Non-Uniform Meshes" accepted for Nanomechanics Science and Technology An International Journal.
4. Rahmati, A. R., Niazi, S., Naderi Beni, M., "Natural convection flow simulation of nanofluid in a square cavity using an incompressible generalized lattice Boltzmann method", Defect and Diffusion Forum, Vol. 329, pp. 69-79, 2012.

b. Conference Papers

۱- ارائه و چاپ مقاله با عنوان ″ شبیه سازی عددی شعله های پیش مخلوط مغشوش ″ در دهمین کنفرانس سالانه (بین المللی) مهندسی مکانیک در سال ۱۳۸۱ (محل برگزاری : تهران- دانشگاه صنعتی خواجه نصیر الدین طوسی- دانشکده مکانیک)

۲- ارائه و چاپ مقاله با عنوان ″ شبیه سازی عددی شعله های پیش مخلوط مغشوش با استفاده از مدل زیمنت (Zimont) ″ در چهارمین کنفرانس انجمن هوافضای ایران در سال ۱۳۸۱ (محل برگزاری : تهران- دانشگاه صنعتی امیرکبیر- دانشکده مهندسی هوافضا)

۳- ارائه و چاپ مقاله با عنوان ″ کاربرد مدل بری (Bray) درشبیه سازی عددی شعله های پیش مخلوط مغشوش با نرخ واکنش شیمیایی زیاد ″ در یازدهمین کنفرانس سالانه (بین المللی) مهندسی مکانیک در سال ۱۳۸۲ (محل برگزاری : مشهد- دانشگاه فردوسی مشهد- دانشکده مکانیک)

٤- ارائه و چاپ مقاله با عنوان ″ بررسی اثر تغییر مقیاس طولی انتگرالی در مدل های مبتنی بر چگالی سطح شعله در شبیه سازی عددی شعله های پیش مخلوط مغشوش ″ در یازدهمین کنفرانس سالانه (بین المللی) مهندسی مکانیک در سال ۱۳۸۲ (محل برگزاری: مشهد- دانشگاه فردوسی مشهد- دانشکده مکانیک)

٥- چاپ مقاله با عنوان ″ کاربرد و مقایسه مدل های فلیملت در شبیه سازی عددی یک شعله گاز طبیعی پیش مخلوط مغشوش ″ در سیزدهمین کنفرانس سالانه (بین المللی) مهندسی مکانیک در سال ۱۳۸٤ (محل برگزاری: اصفهان- دانشگاه صنعتی اصفهان – دانشکده مکانیک)

6-Rahmati, A. R., Ashrafizaadeh, M., and Shirani, E., "Convective flow simulation by using two hybrid finite-difference thermal lattice Boltzmann models", Book of Extended Abstract of the 5th International Conference for Mesoscopic Methods in Engineering and Science (ICMMES), The Netherlands, 2008, June, The Netherlands, Amsterdam, 2008.

7- Rahmati, A. R., Ashrafizaadeh, M., and Shirani, E., "Natural Convection Simulation by Using Two Thermal Lattice Boltzmann Models", Proceedings of the 16th annual international conference on mechanical engineering, Iran, May 2008, Iran, Kerman, pp. 109-110, 2008.

8- Rahmati, A. R., Ashrafizaadeh, M., and Shirani E., 2008, "Incompressible Multi-Relaxation-Time LBM with Non-Uniform Mesh for LES of Rayleigh-Bénard Convection Flow", Proceedings of the 12th Asian Congress of Fluid Mechanics, Korea, 2008, August, Korea, Daejeon, pp. 54.

9- Rahmati, A. R., Ashrafizaadeh, M., and Shirani, E., "Numerical Instability Analysis of the Lattice Boltzmann Equations Methods Using Different Schemes", Proceedings of the

12th Asian Congress of Fluid Mechanics, Korea, 2008, August, Korea, Daejeon, pp. 33, 2008 .

10- Rahmati, A. R., and Ashrafizaadeh M., "Performance evaluation of multi relaxation time lattice Boltzmann method for 3D fluid flow simulation", Proceedings of the 15th annual international conference on mechanical engineering, Iran, May 2007, Iran: Tehran, pp. 173-174, 2007.

11- Rahmati, A. R., Ashrafizaadeh, M., and Shirani, E., 2008, "Numerical simulation of viscous flows using an incompressible lattice Boltzmann method on non-uniform grids", Proceedings of the 7th Iranian Aerospace Society Conference, Iran, February 2008, Iran: Tehran, pp. 43-44.

12- Rahmati, A. R., Ashrafizaadeh, M., and Shirani, E., "Multi-Relaxation-Time Lattice Boltzmann Method for LES of Turbulent Flows", Proceedings of the 11th Fluid Dynamics Conference, Iran, May 2008, Iran, Tehran, pp. 8, 2008.

13- Rahmati, A. R., Ashrafizaadeh, M., and Shirani, E., "Improvement of Numerical Instability of Lattice Boltzmann Methods Using Various Techniques", Proceedings of the 16th annual international conference on mechanical engineering, Iran, May 2008, Iran, Kerman, pp. 115-116, 2008.

14- Rahmati, A. R., and Niazi, S., "Application Of A Lattice Boltzmann Method On Non-Uniform Meshes For Simulation Of Micro Flows", Proceedings of the 10th Iranian Aerospace Society Conference, Iran, Tehran, March 2011.

15- Rahmati, A. R., and Niazi, S., "Numerical Simulation Of Thermal Micro Flow Using Double Density Distributed Function Lattice Boltzmann Method", Proceedings of the 10th Iranian Aerospace Society Conference, Iran, Tehran, March 2011.

16- Rahmati, A. R., and Niazi, S., "Application Of Entropic Lattice Boltzmann Method For Simulation Of Micro Flows", Proceedings of the 10th Iranian Aerospace Society Conference, Iran, Tehran, March 2011.

17- Rahmati, A.R., and Niazi, S., "A Multi Relaxation Time Lattice Boltzmann Method For Simulation Of Flow In Micro Devices", Proceedings of the 19th annual international conference on mechanical engineering, Iran, Birjand, May 2011.

18- Rahmati, A.R., and Ashrafizaadeh, M., "A New Lattice Boltzmann Method For Simulation Of Three- Dimensional Turbulent Natural Convection Flows", Proceedings of the 19th annual international conference on mechanical engineering, Iran, Birjand, May 2011 .

19- Rahmati, A. R., Niazi, S., Naderi Beni, M., "Gas Flow Simulation in Micro Tubes Using a Multi-Relaxation-Time Lattice Boltzmann Method", Proceedings of the 7th International Conference on Computational Heat and Mass Transfer, Turkey, Istanbul, Yeditepe Universitesi, July 2011.

20- Rahmati, A. R., Niazi, S., Naderi Beni, M., "An incompressible Generalized Lattice Boltzmann Method For Increasing Heat Transfer With Nanofluids In A Square Cavity", Proceedings of the 7th International Conference on Computational Heat and Mass Transfer, Turkey, Istanbul, Yeditepe Universitesi, July 2011.

21- Rahmati, A. R., Niazi, "2D Numerical Simulation Of Micro Flows Using The Entropic

Formulation Of Lattice Boltzmann Method", 1st Regional Conference on Mechanical Engineering-RCME2011, March 2011, Islamic Azad University – East Tehran Branch, Iran, pp. 251, 2001.

22. Rahmati, A. R., Forouzandeh jounaghani, H., Hadi Sichani, P., "Application of non-Newtonian fluids for simulation of laminar natural convection in a square cavity", 20th Annual International Conference on Mechanical Engineering-ISME2012,16-18 May, 2012, School of Mechanical Eng., Shiraz University, Shiraz, Iran, 2012.

23. Rahmati, A. R., Naderi Beni, M., "Porous Media flow Simulation Using Lattice Boltzmann Method", 20th Annual International Conference on Mechanical Engineering-ISME2012,16-18 May, 2012, School of Mechanical Eng., Shiraz University, Shiraz, Iran, 2012.

24. Rahmati, A. R., "Turbulent Rayleigh-Bénard convection flow simulation using a multi-relaxation-time lattice Boltzmann method on non-uniform grids", 20th Annual International Conference on Mechanical Engineering-ISME2012,16-18 May, 2012, School of Mechanical Eng., Shiraz University, Shiraz, Iran, 2012.

25. Rahmati, A. R., "Application of Taylor series expansion and least square based lattice Boltzmann method to simulate porous media flow problems", 20th Annual International Conference on Mechanical Engineering-ISME2012,16-18 May, 2012, School of Mechanical Eng., Shiraz University, Shiraz, Iran, 2012.