

# Ghassem Heidarinejad

## Professor in Mechanical Engineering

### Education

- PhD Mechanical Engineering, 1989, Massachusetts Institute of Technology (MIT) , USA  
MSc Mechanical Engineering, 1976, Tehran Polytechnic, Tehran, Iran  
BSc Mechanical Engineering, 1973, Tehran Polytechnic, Tehran, Iran



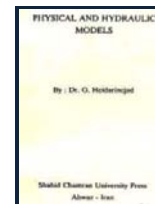
### Position held

- 2009-2010 Visiting Professor, the Pennsylvania State University (PSU), USA  
2001-2007 President, Building and Housing Research Center (BHRC), Tehran, Iran  
1997-2000 Dean, College of Engineering, Tarbiat Modares University, Tehran, Iran  
1996-1997 Head, Department of Mechanical Engineering, Tarbiat Modares University, Tehran, Iran  
1990-1995 Vice-Chancellor, Shahid Chamran University, Ahvaz, Iran  
1989-1989 Visiting Scientist, Massachusetts Institute of Technology (MIT), USA

### Books

#### Physical and hydraulic models

Ghassem Heidarinejad,  
Shahid Chamran University Press (1997), Ahvaz Iran,  
in Farsi

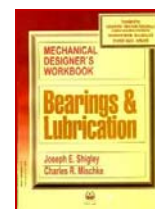
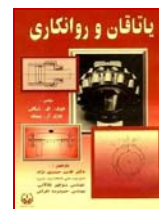


#### Bearing & Lubrication

Ghassem Heidarinejad., Baghalie M. and Afrash H.,  
Jahad Daneshgahi Press (1999), Tehran Iran,  
in Farsi;

Translation of the same title by Shigley J. and Mischke  
C., McGraw Hill (1990)

2<sup>nd</sup> rank, student year book 1999



#### Advanced Fluid Mechanics

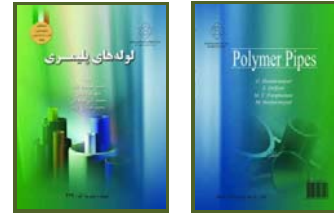
Ghassem Heidarinejad,  
Jahad Daneshgahi Press (2005), Tehran Iran,  
in Farsi



### **Polymer Pipes**

Ghassem Heidarinejad, Shahram Delfani, Mohammad Taghi Farghadani and Mohammad Heidarinejad, Building and Housing Research Center (BHRC) Publication (2005), Tehran Iran, in Farsi

1<sup>st</sup> rank , student year book 2006



### **Principles and Applications of Evaporative Coolers**

Ghassem Heidarinejad, Shahram Delfani, Jafar Esmaeelian and Mohammad Heidarinejad, Building and Housing Research Center (BHRC) Publication (2007), Tehran Iran, in Farsi



### **Turbulence**

Ghassem Heidarinejad, Author Publisher (2009), Tehran Iran, in Farsi



### **Thermal Comfort**

Ghassem Heidarinejad, Shahram Delfani, Mohammad Amin Zangeneh and Mohammad Heidarinejad, Building and Housing Research Center (BHRC) Publication (2009), Tehran Iran, in Farsi



### **Recently published journal papers**

- Vahid Khalajzadeh, Moien Farmahini Farahani and Ghassem Heidarinejad, A novel integrated system of ground heat exchanger and indirect evaporative cooler, *Energy and Building* 49 (2012) 604-610
- Moien Farmahini Farahani and Ghassem Heidarinejad, Increasing effectiveness of evaporative cooling by pre-cooling using nocturnally stored water, *Applied Thermal Engineering*, 38 (2012) 117-123
- G. Heidarinejad and S. Shahriarian, Simulation of premixed combustion flow around circular cylinder using hybrid random vortex, *International Journal of Engineering*, 24 No 3 (2011) 269-277
- Ghassem Heidarinejad and Hadi Pasdarsahri, Potential of a desiccant-evaporative cooling system performance in a multi-climate country, *International Journal of Refrigeration*, 34(5) (2011) 1251-1261
- Vahid Khalajzadeh, Ghassem Heidarinejad and Jelena Srebric, Parameters Optimization of a Vertical Ground Heat Exchanger based on Response Surface Methodology, *Energy and Building* 43(6) (2011) 1288-1294
- Ghassem Heidarinejad and Hadi Pasdarsahri, The effects of operational conditions of the desiccant wheel on the performance of desiccant cooling cycles, *Energy and Buildings* 42(12) (2010) 2416-2423
- Moien Farmahini Farahani, Ghassem Heidarinejad and Shahram Delfani, A

- Two-Stage System of Nocturnal Radiative and Indirect Evaporative Cooling for Conditions in Tehran, *Energy and Building* 42(11) (2010) 2131-2138
- Ghassem Heidarinejad, Vahid Khalajzadeh and Shahram Delfani, Performance analysis of a ground assisted direct evaporative cooling air conditioner, *Building and Environment* 45(11) (2010) 2421-2429
  - Ghassem Heidarinejad, Moien Farmahini Farahani and Shahram Delfani, Investigation of a Hybrid System of Nocturnal Radiative Cooling and Direct Evaporative Cooling, *Building and Environment* 45 (6) (2010) 1521-1528
  - Ghassem Heidarinejad and Abdollah Eskandari Sani, Two-dimensional modeling for stability analysis of two-phase stratified flow, *International Journal for Numerical Methods in Fluids*, 62(7) (2010) 733-746
  - Ghassem Heidarinejad, Mojtaba Bozorgmehr, Shahram Delfani and Jafar Esmaelian, Experimental investigation of two-stage indirect/direct evaporative cooling system in various climatic conditions, *Building and Environment*, 44 (10) (2009) 2073-2079
  - Ghassem Heidarinejad, Maryam Karami and Shahram Delfani, Numerical simulation of counter-flow wet cooling towers, *International Journal of Refrigeration*, 32(5) (2009) 996-1002
  - G. Heidarinejad, H. Pasharshahi and S. Delfani, The effects of geometrical characteristics of desiccant wheel on its performance, *International Journal of Engineering*, 22 No 1 (2009) 63-75
  - Ghassem Heidarinejad, Mohammad Heidarinejad, Shahram Delfani and Jafar Esmaelian, Feasibility of using various kinds of cooling systems in a multi-climates country, *Energy and Buildings*, 40(10) (2008) 1946-1953
  - G. Heidarinejad, R. Shirmohammadi and M. Maerefat, Heat wave phenomena in solids subjected to time dependent surface heat flux, *Heat Mass Transfer*, 44(4) (2008) 381-392

### **Previously published journal papers**

- Heidarinejad G. and Bozorgmehr M., Heat and mass transfer modeling of two stage indirect/direct evaporative air coolers, *ASHRAE Thailand Chapter* (2008) 1-8
- Mohammadi A.R., Heidarinejad G. and Mazaheri K., A new model for prediction of heat eddy diffusivity in pipe expansion turbulent flows, *Iranian Journal of Chemical Engineering*, 2 No 1 (2005) 24-33
- Heidarinejad G. and Delfani S., Numerical simulation of the wake flows behind an ellipse using random vortex method, *International Journal of Engineering*, 16 (2003) 183-192
- Heidarinejad G. and Baghale asl., Providence and development of piping benchmark problems to evaluate and verify Simflex II computer code for designing and analyzing nuclear power plant piping system, *Amirkabir Journal of Engineering*, 11 No (2001) 22-
- Heidarinejad G. and Delfani S., Direct numerical simulation of the wake flow behind a cylinder using random vortex method in medium to high Reynolds numbers, *International Journal of Engineering*, 13 (2000) 33-50
- Ghoniem A. F., Knio O.M. and Heidarinejad G., 1989, The structure of the reaction zone in a reacting mixing layer, 12th International Colloquium on Dynamics of Explosions and Reacting Systems, Ann Arbor, Michigan 1989; also in Dynamics of Deflagrations and Reactive Systems, Flames, *Progress in Astronautics and Aeronautics*, AIAA 131 (1991)

- Ghoniem, A. F. and Heidarinejad G., Effect of Damkohler number on the reactive zone in a shear layer, *J. of Combustion and Flames*, 83 (1991) 1-16
- Ghoniem A. F. and Heidarinejad G., Effects of two-dimensional shear layer dynamics on mixing and combustion at low heat release, *J. of Combust. Sci. and Tech.*, 72 (1990) 79-99
- Ghoniem A. F., Heidarinejad G. and Krishnan A., Turbulence-Combustion interactions in reacting shear layer, Proceeding of the joint France-USA workshop on turbulent reactive flows, France 1986, also in Turbulent reactive flows edited by Borghi and Murthy, Lecture notes in engineering, *Spring Verlag* 40 (1989) 638-671
- Ghoniem A. F., Heidarinejad G., and Krishnan A., Simulation of a thermally stratified shear layer using the vortex element method, *Journal of Computational Physics*, 79 No 1 (1988) 135-166

### Papers in Farsi

- احسان لیوانی و قاسم حیدری نژاد، شبیه سازی سرمایه‌ش جذبی آب - آمونیاک دو اثره خورشیدی و بررسی عملکرد آن در شرایط مختلف آب و هوایی ایران، مجله علمی پژوهشی مهندسی مکانیک امیر کبیر، سال چهل و سه، شماره 1، تابستان (1390) 85-91
- قاسم حیدری نژاد و توحید صداقت، حل عددی جریان آشفته به روش گردابه‌های بزرگ با استفاده از مدل زیر شبکه دینامیکی موضعی، *مجله فنی و مهندسی مدرس* - مکانیک دوره دهم شماره 2 (1389) 31-41
- قاسم حیدری نژاد، عبدالله اسکندری ثانی و امین ذوالفقاری، بررسی جریان آشفته دوبعدی و پدیده انتقال به روش گردابه‌های بزرگ (LES)، *مجله فنی و مهندسی مدرس* - مکانیک دوره دهم شماره 2 (1389) 79-87
- حیدری نژاد قاسم، غیائی طبری نیما و امینی پژمان، شبیه سازی عددی میدان سرعت در لایه برشی دو بعدی با تحریک اجباری به روش المان گردابه‌ای، *مجله فنی و مهندسی مدرس* - مکانیک 39 (1389) 91-101
- حیدری نژاد قاسم و اسماعیلیان جعفر، شبیه سازی عددی جریان سیال لزج با استفاده از روش المان مرزی، *مجله علمی پژوهشی مهندسی مکانیک امیر کبیر*، سال چهل و یکم، شماره 2، زمستان (1388) 47-54
- محمدی علیرضا، مظاهری کیومرث و حیدری نژاد قاسم، شبیه سازی عددی جریان داخل محفظه احتراق در رم جت سوخت جامد، *مجله فنی و مهندسی مدرس*، 20 (1384) 9-21
- حیدری نژاد قاسم، اصفهانیان وحید و رشیدی محمد مهدی، شبیه سازی عددی جریان داخلی توسط روش رو، *مجله فنی و مهندسی مدرس*، 12 (1382) 27-41
- حیدری نژاد قاسم، اصفهانیان وحید و رشیدی محمد مهدی، تاثیر اتلاف عددی بر روی متغیرهای جریان لزج مافوق صوت، *مجله علمی پژوهشی امیر کبیر*، 53 (1381) 217-
- حیدری نژاد قاسم و صفی خانی عبدالرضا، تعیین توزیع دما در شمش خروجی از کوره کف گرد پیش گرم، *مجله علمی پژوهشی امیر کبیر*، 52 (1381) 573-579
- حیدری نژاد قاسم، حل لایه مرزی آرام و آشفته با استفاده از روش گردابه تصادفی، *مجله مهندسی مکانیک ایران*، 2 (1378) 29-37

### Proceeding papers

More than 75 papers presented to national and international conferences

### Research interests

- Algorithm development and error analysis
- Numerical simulation of turbulent and reactive flows using Vortex / Boundary Elements / LES / methods
- Hybrid / Evaporative Direct-Indirect / Desiccant / Radiative / Geothermal / cooling systems
- Energy Consumption Reduction

### Teaching interests

- Continuum Mechanics
- Advanced Fluid Mechanics
- Turbulence
- Advanced Numerical Methods
- Computational Fluid Dynamics (CFD)
- Advanced HVAC systems
- Boundary Layers
- Large Eddy Simulation
- Finite Element Methods

### **Contact**

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