

CURRICULUM VITAE OF GEORGE HUANG CHAIR, DEPARTMENT OF MECHANICAL AND MATERIALS ENGINEERING

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CURRENT INTERESTS

Teaching and Research in Fluid Mechanics, Heat and Mass Transfer with emphasis on High Performance Computations, Modeling, Designs and Understanding of Complex Transport Processes .

Areas of research interests include:

- (1) Turbulence/transition modeling of flows – DNS, LES, DES and RANS
- (2) Numerical simulation of flow physics and control – synthetic jets and plasma control
- (3) Genetic algorithm for flow control
- (4) High order spectral element schemes for aero-acoustics and fluid-structure interactions
- (5) High performance PC-cluster network computations
- (6) Numerical methods and code development for CFD applications
- (7) Modeling and simulation of multi-scale physics
- (8) Computational of cardiovascular system
- (9) Computational transport phenomena in industrial applications
- (10) Thermodynamics, Heat Transfer and energy-related research

EXPERIENCE

2006-now Wright State University Dayton, Ohio
Professor and Chair of Department of Mechanical and Materials Engineering

1996-2006 University of Kentucky Lexington, KY
Director of Graduate Studies

I have been the Director of Graduate Studies of the Mechanical Engineering Department since 2000. During my five-year term I have led efforts to improve the graduate program in Mechanical Engineering, resulting in a number of accomplishments and milestones:

- The graduate enrollment in the department has doubled to more than 150.
- The number of American students attending graduate school has increased sharply, with almost a 1-to-1 ratio between domestic and foreign students in the MS program.
- The number of our undergraduates continuing for graduate work has also doubled.
- The number of female and minority students in our graduate program has more than tripled.
- The PhD qualifying exam procedure has been improved and approved, streamlining the production of quality PhD students.
- A new program to extend the non-thesis Master program to the Paducah campus at the Challenger Center has been proposed and approved.
- A new initiative for PhD program has been implemented to increase the

productivity of PhD students. This initiative was approved by the External Advisory Board of Mechanical Engineering Department.

- A new Internet-based technology for distance learning course delivery has been implemented and is now used as a standard practice by faculty in lectures and tutorials.
- Present a invited paper at iCEER-2005 iNEER Conference for Engineering and Research on ABET EC2000, Tainan, Taiwan, March 1-5, 2005.

Professor

- Currently guiding 1 post-doc's, 3 PhD and 1 MS students.
- Since 1997, graduated 2 PhD and worked with 10 post-doctoral students.
- PI of research funding of more than 3.2 million dollars since 1997. Funded by NASA, GE, Rockwell, Lexmark, Medventure and Vogt Power.
- Recipient of 2006 Silver Award and the Ackroyd Stuart prize from the Royal Aeronautical Society
- Co-winner of 1998 NASA software of the year award, honorable mention, "Overset Tools for CFD Analysis."
- 1999 Outstanding Teacher Award, College of Engineering, Tau Beta Pi and Department of Mechanical Engineering, University of Kentucky.
- Co-winner of the SC2000 Gordon Bell Prize, honorable mention, price/performance category, "High-cost CFD on a low-cost cluster", 2000.
- 2004 ASME Student Section Outstanding Faculty Award, College of Engineering, University of Kentucky.
- 2006 ASME Student Section Outstanding Faculty Award, College of Engineering, University of Kentucky.

1991–1996 MCAT/ELORET/NASA-Ames Moffett Field, CA

Senior Research Scientist

- In charge of CFD validation and turbulence modeling for compressible flows.
- NASA group achievement award, National Aero Space Plane, Computational Fluid Dynamics Validation Team, 1992.

1989–1991 Stanford University Stanford, CA

Research Associate

- Supervisor: Professor Peter Bradshaw.
- Turbulence modeling for compressible flows, funded by NASA-Ames and Wright-Patterson Air Force Base.
- Graduate 1 MSc student.

1986–1989 Michigan Technological University Houghton, MI

Assistant Professor

- Graduate 3 MSc students

EDUCATION

1981–1986 UMIST, Manchester, England Ph.D. in Mechanical Engineering.
1979–1981 McGill University, Montreal, Canada M.Eng. in Chemical Engineering
1975-1979 Chung Yuan University, Chung-Li, Taiwan B.Sc. in Chemical Engineering

PUBLICATIONS

- (1) Th. Hauser., T. I. Mattox, R. P. LeBeau, Jr., H. G. Dietz, and P. G. Huang, "Code optimizations for complex microprocessors applied to CFD software," *SIAM Journal of Scientific Computing*, v 25, n 4, p 1461-1477, 2003.
- (2) Huang, L., P.G. Huang, R.P. LeBeau, Th. Hauser, "Numerical study of suction and blowing control mechanism on NACA0012 airfoil". *Journal of Aircraft*. Vol. 41, No. 5, pp. 1005-1013. September–October 2004.
- (3) G. Wang, P. G. Huang and Y. Zhang, "Numerical Analysis of Gas Metal Arc Welding under Pulsating Current Conditions," *Journal of Metallurgical and Material Transactions* vol. 35B, pp. 857-66, 2004.
- (4) Suzen, Y.B and Huang, P.G., "Comprehensive Validation of an Intermittency Transport Model for Transitional Low-Pressure Turbine Flows," *The Aeronautical Journal*, vol 109, number 1093, pp.101-118, March, 2005,
- (5) Suzen, Y.B. and P. G. Huang, "Numerical Simulation of Unsteady Wake/Blade Interaction in Low Pressure Turbine Flows Using an Intermittency Transport Equation," *Journal of Turbomachinery*, Vol. , No. 3, pp. 431-444, July 2005.
- (6) Menter, F. R., Langtry, R. B., Likki, S.R., Suzen, Y.B., Huang, P.G, Volker, S., "A Correlation-Based Transition Model Using Local Variables Part I – Model Formulation," *Journal of Turbomachinery*, Vol. 128, No. 3, pp. 413-422, July 2006.
- (7) Langtry, R. B., Menter, F. R., Likki, S.R., Suzen, Y.B., Huang, P.G, Volker, S., "A Correlation-Based Transition Model Using Local Variables Part II - Test Cases and Industrial Applications," *Journal of Turbomachinery*, Vol. 128, No. 3, pp. 423-434, July 2006
- (8) Suzen, Y.B., Huang, P.G., Ashpis D.E., Volino, R.J., Corke, T.C., Thomas, F.O., Huang, J., Lake, J.P., King, P.I., "A Computational Fluid Dynamics Study of Transitional Flows in Low-Pressure Turbines Under a Wide Range of Operating Conditions", *Journal of Turbomachinery*, Vol. 129, No. 3, pp. 527-541, July 2007.
- (9) Huang, L., P.G. Huang, R.P. LeBeau, Jr., and Th. Hauser, "Optimization of Blowing and Suction Control on NACA 0012 Airfoil Using EARND Genetic Algorithm with Diversity Control," *Journal of Aircraft*, 44, 1337-1349, 2007.
- (10) A.M. Wala, S. Vytla, C.D. Taylor and P. G. Huang, "Mine face ventilation: a comparison of CFD results against benchmark experiments for the CFD code validation," *Mining Engineering*, pp. 1-7, July, 2007.

Book Chapters

- (1) P. G. Huang and J. M. MacInnes, "Modeling and numerical prediction of transport processes", course note, Department of Mechanical Engineering, Michigan Technological University, 1986.
- (2) J. G. Marvin and P. G. Huang, "Turbulence Modeling – Progress and Future Outlook," *Computational Fluid Dynamics Review*, World Scientific Publication Cp Pte Ltd, 1998.
- (3) P. G. Huang, "Physics and Computations of Flows under Adverse Pressure Gradients," *Modeling Complex Turbulent Flows*, ICASE/LaRC Interdisciplinary Series in Science and Engineering, editors: M D Salas, J. N Hefner, L Sakell, Kluwer Academic Publishers, pp. 245-258, 1999.
- (4) Hauser, Th. and Huang, P. G.: "Shared Memory Parallelization of an implicit ADI-type CFD code", *Parallel computational fluid dynamics, development and applications of parallel technology*, Editors: C.A. Lin et. al, Elsevier Science B.B, p 145-152, 1999.