

Curriculum Vitae

Thomas Hauser

Business Address:

Mechanical & Aerospace Engineering
College of Engineering
Utah State University
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North Logan, Utah, 84341
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Education

Doctor of Engineering

Department of Mechanical Engineering, University of Technology (TUM),
Munich, Germany; thesis title: "Hypersonic flow around a blunt body inter-
acting with wave like disturbances"

October 1997

Diploma in Engineering

Department of Mechanical Engineering, University of Technology (TUM),
Munich, Germany; thesis title: "High order methods for the numerical solu-
tions of the Euler equations"

June 1990

Academic Appointments

Assistant Professor

Mechanical & Aerospace Engineering
Utah State University

Aug. 2002-present

Engineer Associate

Department of Mechanical Engineering, University of Kentucky
Center for Computational Science, University of Kentucky

2000 - July 2002

Postdoctoral Researcher

Department of Mechanical Engineering, University of Kentucky
Center for Computational Science, University of Kentucky

1997 - 2000

Research Associate

Member of the Center of Excellence "Transatmospheric Flight", Department
of Mechanical Engineering, University of Technology (TUM), Munich, Ger-
many

1992 - 1997

Research Assistant

Department of Mechanical Engineering, University of Technology (TUM),
Munich, Germany

1992 - 1997

Awards

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| Gordon Bell Prize Honorable Mention in Price/Performance Category "High-Cost CFD on a Low-Cost Cluster" at the IEEE/ACM SC2000 Conference on High-Performance Networking and Computing | November 2000 |
| HPC Games "Most Innovative Hardware" award at the IEEE/ACM SC2000 Conference on High-performance Networking and Computing | November 2000 |
| Research visit to Edinburgh Parallel Computing Center under the Human Capital and Mobility Programme of the European Commission | June 1996 -
August 1996 |

Grants and Projects

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| SDL, <i>Numerical simulations of the flowfield for the CODA II mission</i> , Co-PI, \$23,000 | September 05 -
July 2005 |
| College of Engineering <i>Numerical simulations of reentry flow in the Mars atmosphere</i> , PI, \$15,000 | September 05 -
July 2005 |
| NSF, <i>Development of a low-cost 64-bit cluster supercomputer for engineering and physics simulations</i> , PI, \$134,617 | September 2003 -
August 2006 |
| NSF, <i>Integration of Computer Simulation Technologies into an Undergraduate Mechanical Engineering Curriculum</i> , Co-PI, \$68,224 | October 2003 -
September 2004 |
| Utah State University, New Faculty Research Grant, <i>Simulating Wind-Induced Cable Oscillations</i> , PI, \$10,100 | August 2003 -
July 2004 |
| AMD, <i>64 AMD Microprocessor</i> , \$10,000 | October 2002 |
| Micron Computers, <i>PC 133 memory modules</i> , \$2,500 | November 2002 |
| NASA EPSCoR, \$575,000 <i>Development and Application of High-End Engineering and Geophysical CFD Models on Optimized PC Clusters</i> , Co-PI | August 2001 -
July 2004 |
| Center for Computational Science, University of Kentucky, \$22,000 / year
<i>Development of a Combined DNS/LES/RANS Tool (LESTool) for Predictions of Complex Turbulent Flows</i> , Co-PI | August 1998 -
July 2002 |

Publications**Papers in Refereed Journals**

- Huang, L., P. Huang, R. LeBeau and T. Hauser. Numerical Study of Blowing and Suction Control. *Journal of Aircraft*, 41(5), September-October, 2004.
- Hauser, Th., T.I. Mattox, R.P. LeBeau, H.G. Dietz and P.G. Huang. Code optimizations for complex microprocessors applied to CFD software. *SIAM Journal on Scientific Computing*, 25(4):1461-1477, 2004.

- Hannappel, R., T. Hauser and R. Friedrich. A Comparison of ENO and TVD schemes for computation of shock-turbulence interaction. *Journal of Computational Physics*, 121:176-184, 1995.
- Friedrich, R., R. Hannappel and T. Hauser. Stoss-Wellen- und Stoss-Turbulenz- Wechselwirkung. In A. L. Hrsg, editor, *turbulente stromungen in forschung und praxis*, pages 131-144. 1993. Verlag Shaker, Aachen.
- Friedrich, R., R. Hannappel and T. Hauser. On the interaction of wave-like disturbances with shocks - Two idealisations of the shock-turbulence interaction problem. *Acta Mechanica*, 1992.

Papers at Refereed Conferences

- P.D. Pakalapati and Th. Hauser, Benchmarking parallel I/O performance for Computational Fluid Dynamics applications 43rd AIAA Aerospace Sciences Meeting and Exhibit, 2005
- Th. Hauser, A high-performance flow solver for a reconfigurable FPGA-Based Hypercomputer submitted to 43rd AIAA Aerospace Sciences Meeting and Exhibit, 2005
- L. Huang, R.P. Lebau and Th. Hauser Application of Genetic Algorithm to two-jet control system on a NACA 0012 Airfoil *Third International Conference on Computational Fluid Dynamics (ICCFD3)*, Toronto, Canada, July 12-16, 2004
- Th. Hauser, Parallel I/O for the CGNS system *42nd AIAA Aerospace Sciences Meeting and Exhibit*, AIAA paper 2004-1088, Reno, NV, January, 2004
- L. Huang, R.P. LeBeau, P.G. Huang and Th. Hauser. Optimization of Blowing and Suction Control on a NACA 0012 Airfoil using Genetic Algorithm *42nd AIAA Aerospace Sciences Meeting and Exhibit*, AIAA paper 2004-225, Reno, NV, January 2004
- Hauser, T., R. LeBeau, T. Mattox, P. Huang and H. Dietz. Improving the performance of Computational Fluid Dynamics codes on Linux Cluster Architectures. *16th AIAA Computational Fluid Dynamics Conference*. Orlando, Florida, June 23-26, 2003. AIAA.
- Hauser, T., T. Mattox, R. LeBeau, H. Dietz and P. Huang. A comparative study of the performance of a CFD program across different Linux cluster architectures. *Proceedings of the third LCI international conference on linux clusters*. St. Petersburg, FL, 2002.
- Munday, D., J. Jacob, T. Hauser and P. Huang. Experimental and Numerical Investigation of Aerodynamic Flow Control Using Oscillating Adaptive Surfaces. *1st AIAA Flow Control Conference and Exhibit*, St. Louis, Missouri, June 24-26, 2002. AIAA.
- Hauser, T., T. Mattox, R. LeBeau, H. Dietz and P. Huang. High-Cost CFD on a Low-cost Cluster. *Regular paper at SC2000 and honorable mention for the Gordon Bell award in the category "price-performance"*. 2000.

- Hauser, T. and P. Huang. A hierarchical parallelization concept for a high-performance Navier-Stokes solver. *Proceedings of the International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'99)*. 1999.
- Hauser, T. and P. Huang. Shared Memory Parallelization of an implicit ADI-type CFD code. In C. Lin and et. al, editors, *Parallel computational fluid dynamics, development and applications of parallel technology, proceedings of the Parallel CFD'98 Conference*, pages 145-152. 1999. Elsevier Science B.B.
- Hauser, T. and R. Friedrich. Hypersonic flow around a blunt cone under the influence of external wave-like perturbations. Presentation at the GAMM Jahrestagung, Regensburg, 1997.
- Hauser, T. and R. Friedrich. Solving the compressible Navier-Stokes equations on parallel machines using MPI. *Proceedings of the Cluster Computing Conference*. Emory University, Atlanta, Georgia, 1997.

Papers at Unrefereed Conferences

- Hauser, T., T. Mattox, R. LeBeau, H. Dietz and P. Huang. Scrutinizing CFD performance on multiple Linux cluster architectures. Presentation at the Clusterworld Conference & Expo, June 23-26, San Jose, California, 2003.
- Hauser, T., R. LeBeau, T. Mattox, H. Dietz and P. Huang. High-Cost CFD on a Low-Cost Cluster. *Proceedings of 8th National CFD Conference*. 2001. Invited Keynote Talk, E-land Taiwan, Aug 18-20.
- Hauser, T. and P. Huang. Numerical simulation of turbulent spots. 25th Annual Dayton-Cincinnati Aerospace Science Symposium, 2000.
- Hauser, T. and P. Huang. Large eddy simulation of low pressure turbine flow. 24th Annual Dayton-Cincinnati Aerospace Science Symposium, 1999.

Other Publications

- Hauser, T. and P. Huang. Shared Memory Parallelization of an implicit ADI-type CFD code. Technical report, NASA-CR-208688, NASA, 1998.

Invited Seminars

- Th. Hauser "High-End CFD Models on PC Clusters", INEEL, Oct 22, 2002

Teaching Experience

- Numerical Methods I, MAE 2200, Fall 2004
- High-performance computing for engineers, Fall 2004,
- Advanced CFD, MAE6440, Fall 2003

Thermodynamics I, MAE2400, Spring 2003

Radiation Heat Transfer, MAE6480, Fall 2002

Service

Coorganizer of the session “DNS/LES for Heat Transfer Problems” for the ASME FED in Charlotte, NC, 2004

Reviewer of “Numerical Analysis of Gas Metal Arc Welding under Pulsating Current Conditions” for Metallurgical and Materials Transactions

Session chair at the ASME Heat Transfer Conference in Las Vegas, 2003

Reviewer for several papers for ASME HT03 conference

Reviewer for IMECE 2003

Member of the ASME K-20 committee on computational heat transfer