Curriculum Vitae
Mark Sussman
June 2009

GENERAL INFORMATION

University Address:	Applied and Computational Math Mathematics College of Arts and Sciences 002C Love Building Florida State University Tallahassee, Florida 32306-4510 Phone: (850) 644-7194; Fax: (850) 644-4053
E-Mail Address:	sussman@math.fsu.edu
Web Site:	http://www.math.fsu.edu/~sussman

Professional Preparation

1989-1994	PhD, University of California, Los Angeles, Los Angeles, CA. Major: Mathematics. Dissertation: A Level Set Approach for Computing Solutions to Incompressible Two-Phase Flow. Dissertation supervisor: Stanley Osher.
1987-1989	MA, University of California, Los Angeles, Los Angeles, CA. Major: Mathematics.
1983-1986	BS, San Diego State University, San Diego, CA. Applied Mathematics, Physics and Computer Science. Graduated summa cum laude.

Post-Degree Education and Training

1996-1999	Visiting Research Assistant Professor, University of California, Davis, Davis, CA.
1994-1996	Post Doc, Lawrence Livermore National Laboratory, Livermore, CA.

Professional Experience

2005-present	Associate Professor - Applied and Computational Math, Department of Mathematics, College of Arts and Sciences, Florida State University. Responsible for research, teaching, and service.
1999-2005	Assistant Professor - Applied and Computational Math, Department of Mathematics, College of Arts and Sciences, Florida State University. Responsible for research, teaching, and service.
1987-1992	Programmer, Unique Business Systems, Santa Monica, CA

Honors and Awards

1. Computational Mechanics Achievement Award, The Japan Society of Mechanical Engineers, Computational Mechanics Division (2007).
2. Fluid and Particle Processing Award, the Society of Chemical Engineering, Japan (2003).

Membership in Professional Organizations

1. Society for Industrial Applied Mathematics (SIAM)
2. American Physical Society (APS)
3. American Institute of Aeronautics and Astronautics (AIAA)

TEACHING

Courses Taught
 # = teaching before FSU * = teaching before last promotion

1. Engineering Math I
2. Engineering Math II
3. Numerical Analysis I
4. Numerical Analysis II
5. Numerical PDE I
6. Numerical PDE II
7. Foundations of Computational Math II
8. Directed Individual Study (numerical I): Adam Segall, Jason Hyde
9. Directed Individual Study (numerical II): Nathan Lay, Anton Souslov, Paul Stewart, David Arthur
10. Directed Individual Study (FCM II): Ali Hemmati, Mitsutaka Takeda
11. Directed Individual Study (Numerical PDE II): *Zheng Chen
12. Directed Individual Study (graduate topics): Samet Kadioglu, *Jeffrey Anderson, *Ren Zhi-wei, Edwin Jimenez, Yaohong Wang, Svetlana Simakhina, Austen Duffy
13. *Ordinary Differential Equations
14. *Calculus II
15. *Calculus I
16. #Advanced Calculus
17. #Linear Algebra

Chair of Doctoral Dissertation Supervisory Committees

1. Samet Kadioglu, graduated PhD. (2005). All Speed Multi-Phase Flow Solvers.
2. Edwin Jimenez, passed qualifying exams, prospectus, taking dissertation hours. (2009). (co-advisor)
3. Yaohong Wang, passed qualifying exams, prospectus, taking dissertation hours. (2010). (co-advisor)
4. Svetlana Simakhina, passed qualifying exams, taking dissertation hours. (2010). (advisor)
5. Austen Duffy, passed qualifying exams, taking dissertation hours. (2010). (co-advisor)
6. Qin Li, passed qualifying exams, taking dissertation hours. (2010). (co-advisor)
7. Xiao Chen, passed qualifying exams, taking dissertation hours. (2010). (co-advisor)

Member of Doctoral Dissertation Supervisory Committees

1. James DeMarco, passed qualifying exams, prospectus, taking dissertation hours. (2010).
2. Anand Ganesan, passed qualifying exams, prospectus, taking dissertation hours. (2010).
3. Philip LePoudre, passed qualifying exams, prospectus, taking dissertation hours. (2010).
4. Anna McGregor, passed qualifying exams, prospectus, taking dissertation hours. Duke, Oceanography (2010).
5. Santha Ram Akella, graduated PhD. (2006).
6. Zhenlu Cui, graduated PhD. (2005).
7. Heaya Ann Summy, graduated PhD. (2008).
8. Viorel Mihalef, graduated PhD. Rutgers, Computer Science (2006).

Chair of Master's Thesis Supervisory Committees

1. Ren Zhi-Wei, graduated Masters. (2003).

Member of Master's Thesis Supervisory Committees

1. Rui Wu, graduated Masters. (2007).
2. Fangyu Liu, graduated Masters. (2004).
3. Douglas Windham, graduated Masters. (2002).
4. Kevin Beason, graduated Masters. (2005).

SCHOLARLY OR CREATIVE ACTIVITIES
 # = research before FSU * = research before last promotion

Publications

Refereed Journal Articles

1. M. Ohta, K. Onodera, Y. Yoshida, and M. Sussman (2009). Three-dimensional simulations of the dynamic motion of single drops rising in viscoelastic FENE-CR model fluids. Manuscript submitted for publications, 20 pages.
2. M. Ohta, Y. Akama, Y. Yoshida, and M. Sussman (2009). Three-dimensional simulation of the evolution process to vortex rings of falling drops in an immiscible viscous liquid. Manuscript submitted for publication, 20 pages.
3. M. Ohta, S. Yamaguchi, Y. Yoshida, and M. Sussman (2009). The effect of the viscosity ratio on the dynamic motion of single drops rising through immiscible liquid. Manuscript submitted for publication, 20 pages.
4. M. Ohta, Y. Yoshida, and M. Sussman (2009). A computational study of dynamic processes of a bubble rising in Carreau model fluids. Manuscript submitted for publication, 24 pages.
5. M. Sussman and M. Ohta. (2009). A stable and efficient method for treating surface tension in incompressible two-phase flow. *SIAM Journal on Scientific Computing*, 24 pages. [A new numerical method is developed which overcomes the surface tension related time step constraint. M. Ohta is at Muroran IT.]
6. V. Mihalef, D. Metaxas, and M. Sussman. (2009). Simulation of two-phase flow with sub-scale droplet and bubble effects. *Comput. Graph. Forum*, 28(2), 229-238. [Numerical simulations of fluid structure interaction and multiphase flow in which unresolved bubbles and drops are modeled as escaped markers. V. Mihalef and D. Metaxas are at Rutgers. I was on Mihalef's committee.]
7. S. Kadioglu and M. Sussman. (2008). Adaptive solution techniques for simulating underwater explosions and implosions. *Journal of Computational Physics*, 227, 2083-2104. [New Semi-implicit techniques for simulating underwater explosions and implosions in the context of dynamic adaptive mesh refinement. S. Kadioglu is at INL. I was S. Kadioglu's PhD adviser.]
8. P.A. Stewart, N. Lay, M. Sussman, and M. Ohta. (2008). An improved sharp interface method for viscoelastic and viscous two-phase flows. *Journal of Scientific Computing*, 35(1), 43-61. [Improved numerical algorithms for treating viscosity and viscoelastic effects as a part of simulating incompressible two-phase flows. P.A. Stewart and N. Lay were undergraduate FSU students, M. Ohta is at Muroran IT.]

9. M. Ohta, M. Tsuji, Y. Yoshida, and M. Sussman. (2008). The transient dynamics of a small bubble rising in a low morton number regime. *Chemical Engineering Technology*, 31(9), 1-9. [Study of the instability of nearly spherical rising gas bubbles. M. Ohta, M. Tsuji and Y. Yoshida are at Muroran IT. M. Tsuji is a student.]

10. M. Ohta, D. Kikuchi, Y. Yoshida, and M. Sussman. (2007). Direct numerical simulation of the slow formation process of single bubbles in a viscous liquid. *Journal of Chemical Engineering, Japan*, 40, 939-943. [Numerical simulation of gas bubbles formed via injection of gas into a liquid cavity. M. Ohta, Y. Yoshida and D. Kikuchi are at Muroran IT. D. Kikuchi is a student.]

11. M. Sussman and M. Ohta. (2007). Improvements for calculating two-phase bubble and drop motion using an adaptive sharp interface method. *Fluid Dynamics and Materials Processing*, 3(1), 21-36. [Improved accuracy of numerical methods for treating surface tension. M. Ohta is at Muroran IT.]

12. V. Mihalef, D. Metaxas, and M. Sussman. (2007). Textured Liquids based on the Marker Level Set. *Comput. Graph. Forum*, 26, 457-466. [Numerical simulations of fluid structure interaction and multiphase flow in which textures on air/water surfaces are moved with the fluid. V. Mihalef and D. Metaxas are at Rutgers. I was on Mihalef's committee.]

13. V. Mihalef, S. Kadioglu, M. Sussman, D. Metaxas, and V. Hurmusiadis. (2007). Interaction of multiphase flow with animated models. *Graphical Models*, 70, 33-42. [Numerical simulations of a human swimmer, beating heart, hand scooping out water, etc. are presented. V. Mihalef, D. Metaxas and V. Hurmusiadis are at Rutgers. S. Kadioglu was my PhD student. I was on Mihalef's committee.]

14. M. Sussman, K.M. Smith, M.Y. Hussaini, M. Ohta and R. Zhi-Wei. (2007). A sharp interface method for incompressible two-phase flows. *Journal of Computational Physics*, 221(2), 469-505. [A robust numerical method for computing solutions to incompressible two-phase flows that does away with the empirical thickness parameter. M. Ohta is at Muroran IT. K.M. Smith was a postdoc at FSU. R. Zhi-Wei was my master degree student.]

15. A. VanderWyst, A. Christlieb, I.D. Boyd, and M. Sussman. (2007). Simulation of liquid metal droplets from field emission. *Communications in Computational Physics*, 2(4), 640-661. [A numerical method for computing solutions to charged incompressible free surface flow in the presence of an electric field. A. Christlieb, I.D. Boyd, and A. VanderWyst were all at University of Michigan. A. VanderWyst was a PhD student of Christlieb's.]

16. H. Touil, M.Y. Hussaini, and M. Sussman. (2007). Tracking discontinuities in hyperbolic conservation laws with spectral accuracy. *Journal of Computational Physics*, 225(2), 1810-1826. [A spectral element method for simulating compressible gas dynamics consisting of shock waves. H. Touil was a FSU postdoc.]

17. M. Ohta, M. Yoshida, and M. Sussman. (2006). Three-dimensional computations of the motion of a newtonian drop rising through immiscible quiescent shear-thinning liquids. *Journal of Chemical Engineering*, Japan,

39(4), 394-400. [An adaptive numerical method for simulating shear-thinning two-phase flow phenomena. M. Ohta and M. Yoshida are at Muroran IT.]

18. E. Jimenez, M. Sussman, and M. Ohta. (2005). A computational study of bubble motion in newtonian and viscoelastic fluids. *Fluid Dynamics and Materials Processing*, 1(2), 97-108. [An adaptive numerical method for simulating viscoelastic two-phase flows. M. Ohta is at Muroran IT. I am E. Jimenez's co-advisor.]

19. S. Kadioglu, M. Sussman, S. Osher, J.P. Wright, and M. Kang. (2005). A second order primitive preconditioner for solving all speed multi-phase flows. *Journal of Computational Physics*, 209(2), 477-503. [A new semi-implicit numerical method for computing compressible gas-dynamics. S. Osher, M. Kang are at level set systems. J.P. Wright is at Weidlinger. S. Kadioglu (my PhD student) is now at INL]

20. M. Ohta, S. Haranaka, Y. Yoshida and M. Sussman. (2005). Three-dimensional Numerical Simulations of the effect of initial bubble conditions on the motion of a bubble rising in viscous liquids. *Journal Chemical Engineering (Japan)*, 38(11), 878-882. [A numerical study of the stability of 3d bubbles. M. Ohta, S. Haranaka and Y. Yoshida are at Muroran IT. S. Haranaka is a graduate student.]

21. *M. Ohta, T. Imura, Y. Yoshida and M. Sussman. (2005). A Computational Study of the effect of initial bubble conditions on the motion of a gas bubble rising in viscous liquids. *International Journal of Multiphase Flow*, 31(2), 223-237. [A numerical study on the effect of initial shape and flow field on the terminal bubble shape and flow field. M. Ohta, T. Imura and Y. Yoshida are at Muroran IT. T. Imura is a graduate student.]

22. *M. Sussman. (2005). A Parallelized, Adaptive algorithm for multiphase flows in general geometries. *International Journal of Computers and Structures*, 83, 435-444. [A new numerical algorithm for multiphase flows (air, water, solid) that is designed for parallel computers.]

23. *M. Ohta, S. Haranaka, Y. Yoshida and M. Sussman. (2004). Three-dimensional Numerical Simulations of the motion of a gas bubble rising in viscous liquids. *Journal Chemical Engineering (Japan)*, 37(8), 968-975. [A numerical study of 3d bubble morphology. M. Ohta, S. Haranaka and Y. Yoshida are at Muroran IT. S. Haranaka is a graduate student.]

24. *M. Sussman and M.Y. Hussaini. (2003). A Discontinuous Spectral Element Method for the Level Set equation. *J. Scientific Computing*, 19, 479-500. [A spectrally accurate numerical method for predicting the motion of complex moving boundaries. M.Y. Hussaini is a colleague.]

25. *M. Sussman. (2003). A second order Coupled Level Set and Volume-of-Fluid Method for computing growth and collapse of vapor bubbles. *Journal of Computational Physics*, 187, 110-136. [A second order accurate numerical scheme for modeling explosions and implosions.]

26. #M. Sussman and E.G. Puckett. (2000). A Coupled Level Set Volume of Fluid Method for computing 3d and axisymmetric Incompressible two-phase flows. *Journal of Computational Physics*, 162, 301-337. [A mass conserving numerical method for modeling flows containing air and water. E.G. Puckett is a colleague.]

27. #M. Sussman, A. Almgren, J. Bell, P. Colella, L. Howell and M. Welcome. (1999). An Adaptive Level Set Approach for Incompressible Two-Phase Flows. *Journal of Computational Physics*, 148, 81-124. [A multiresolution numerical method for modeling flows containing air and water. A. Almgren, J. Bell, P. Colella, L. Howell and M. Welcome are colleagues.]

28. #M. Sussman and E. Fatemi. (1999). An Efficient, Interface Preserving Level Set Redistancing Algorithm and Its Application to Interfacial Incompressible Fluid Flow. *SIAM J. Sci. Comput*, 20(4), 1165-1191. [An improved numerical method for re-distancing a level set function. E. Fatemi was a colleague.]

29. #M. Sussman, E. Fatemi, P. Smereka and S. Osher. (1998). An Improved Level Set Method For Incompressible Two-Phase Flows. *Journal of Computers and Fluids*, 27(5-6), 663-680. [An improved numerical method for simulating flows with air and water. E. Fatemi was a colleague. P. Smereka and S. Osher were advisers.]

30. #M. Sussman and P. Smereka. (1997). Axisymmetric Free Boundary Problems. *Journal of Fluid Mechanics*, 341, 269-294. [A numerical study of bubble break-up and drop coalescence. P. Smereka was an adviser.]

31. #M. Sussman, P. Smereka, and S. Osher. (1994). A Level Set Approach for Computing Solutions to Incompressible Two-Phase Flow. *Journal of Computational Physics*, 114, 146-159. [A numerical method for simulating flows with air and water. P. Smereka and S. Osher were advisers.]

Invited Book Chapters

1. G. Tryggvason, M. Sussman and M.Y. Hussaini. (2007). Immersed boundary methods for fluid interfaces. In A. Prosperetti and G. Tryggvason (Ed.), Computational Methods for Multiphase Flow (pp. 37-77). Cambridge : Cambridge University Press.

2. M. Sussman and M. Ohta. (2007). High-order techniques for calculating surface tension forces. In I. Figueiredo, J. Rodrigues, and L. Santos (Ed.), Free Boundary Problems (pp. 425-434). Birkhauser Basel.

3. *M. Sussman. (2000). An adaptive mesh algorithm for free surface flows in general geometries. In A. Vande Wouver, P.H. Saucez, and W.E. Scheisser (Ed.), Adaptive Method of Lines (pp. 207-231). Chapman and Hall/CRC Press.

Refereed Proceedings

1. M. Ohta, Y. Akama, Y. Yoshida, and M. Sussman. (2009). The Unstable Dynamics of Single Drops Rising in Immiscible Viscous Fluids. Proc. of the 8th World Congress of Chemical Engineering (WCCE8) (10 pages). Montreal, Quebec, Canada.

2. V. Mihalef, D. Metaxas, M. Sussman, and L. Axel. (2009). Atrioventricular blood flow simulation based on patient-specific data. In: N. Ayache,

H. Delingette, and M. Sermesant (Ed.), Proceedings of the 2009 Fifth international conference on functional imaging and modeling of the heart, lecture notes in computer science proceedings (10 pages). Nice, France: Springer.

3. V. Mihalef, B. Unlusu, D. Metaxas, M. Sussman and M.Y. Hussaini. (2006). Physics-based boiling simulation. In M.-P. Cani and J. O'Brien (Ed.), Proceedings of the 2006 ACM SIGGRAPH/Eurographics symposium on Computer Animation (pp. 317-324). Vienna Austria: Eurographics Association.

4. *V. Mihalef, M. Sussman, and D. Metaxas. (2004). Animation and control of breaking waves. In R. Boulic and D. Pai (Ed.), Proceedings of the 2004 ACM SIGGRAPH/Eurographics symposium on Computer Animation (pp. 315-324). Grenoble, France: Eurographics Association.

Non-Refereed Journal Articles

1. #M. Sussman. (2001). Computing droplet break-up using an adaptive coupled level set/volume-of-fluid method for incompressible two-phase flow in general geometries. CFD Journal, 9(1).

Non-Refereed Proceedings

1. M. Ohta, K. Onodera, Y. Yoshida, M. Sussman (2008). Three-Dimensional Numerical Simulations of a Rising Bubble in a Viscoelastic FENE-CR Model Fluid. AIP Conference Proceedings: Materials Physics and Applications, 1027. The 15th International Congress on Rheology (896-898). Monterey, CA, USA.

2. D.G. Dommermuth, T.T. O'Shea, D. Wyatt, M. Sussman, G. Weymouth, D. Yue, P. Adams, R. Hand. (2006). The numerical simulation of ship waves using cartesian-grid and volume-of-fluid methods. In Proceedings of the twenty-sixth symposium on naval hydrodynamics (17 pages). Rome, Italy: Strategic Analysis.

3. *M. Ohta, Y. Yoshida, M. Sussman. (2004). Three-Dimensional Numerical Simulations of a Drop Rising in Shear-Thinning Fluid Systems. Proc. of the 14th International Congress on Rheology, CD-ROM, NF35, Seoul, August 22-27.

4. *D.G. Dommermuth, M. Sussman, R. Beck, T.T. O'Shea, and D. Wyatt. (2004). The numerical simulation of ship waves using Cartesian grid methods with adaptive mesh refinement. In Proceedings of the twenty-fifth symposium on naval hydrodynamics (13 pages). St. John's, Newfoundland and Labrador, Canada: National Academies Press.

5. *D.G. Dommermuth and M. Sussman (2000). The numerical simulation of ship waves using cartesian grid methods. In Proceedings of the twenty-third symposium on naval hydrodynamics (18 pages). Val-De-Reuil, France: National Academies Press.

6. #I. Aleinov, E.G. Puckett, and M. Sussman (1999). Formation of droplets in microscale jetting devices. In: proceedings of the 3rd ASME/JSME joint fluids engineering conference (6 pages). San Francisco, CA (= FEDSM99-7106).

7. #P. Colella, D.T. Graves, D. Modiano, E.G. Puckett, and M. Sussman (1999). An embedded boundary/volume of fluid method for free surface flows in irregular geometries. In: proceedings of the 3rd ASME/JSME joint fluids engineering conference (6 pages). San Francisco, CA (= FEDSM99-7108).

8. #D. Marcus, M. Sussman, and D. Chambers (1995). Relaxation spectra of surface waves. In Proceedings of the 1995 International Mechanical Engineering Congress and Exposition (10 pages). Reno, NV.

Non-Refereed Reports

1. #M. Sussman and S. Uto (1998). Computing Oil Spreading Underneath a sheet of ice (CAM report 98-32). Los Angeles, CA: UCLA, Computational and Applied Math.

Non-Refereed Reviews

1. M. Sussman. (2009). Review of "Direct methods and ADI-preconditioned Krylov subspace methods for generalized Lyapunov equations": T. Damm. MathSciNet/Mathematical Reviews, MR 2 464 173, to appear.
2. M. Sussman. (2009). Review of "Preconditioned iterative solver on the coarsest level of a multi-grid method for high frequency time harmonic electromagnetic field analysis": T. Iwashita, K. Yosui, M. Mori, E. Kobayashi. MathSciNet/Mathematical Reviews, MR 2 395 094 (2009f:65068).
3. M. Sussman. (2008). Review of "Energy properties preserving schemes for Burgers' equations": R. Anguelov, J.K. Djoko, J.M.-S. Lubuma. MathSciNet/Mathematical Reviews, MR 2 371 347 (2008k:65159).
4. M. Sussman. (2008). Review of "Convergence of Implicit Difference Methods for Parabolic Functional Differential Equations": K. Kropielnicka. MathSciNet/Mathematical Reviews, MR 2 344 423 (2008g:65110).
5. M. Sussman. (2008). Review of "A study of numerical methods for the level set approach" : P.A. Gremaud, C.M. Kuster, Z. Li. MathSciNet/Mathematical Reviews, MR 2 322 452 (2008e:65246).

Presentations

Invited Keynote and Plenary Presentations at Conferences
For invited keynote and plenary presentations at conferences, 100% were international in scope.

1. M. Sussman. (2007, December). Adaptive level set methods for ship hydrodynamics. Keynote presentation at the Trondheim, Norway workshop, CFD solvers for unsteady marine applications, capabilities and challenges: Center for Ships and Ocean Structures. (international).
2. *M. Sussman. (2003, September). Adaptive level set methods for all-speed flows. Keynote presentation at the Brussels, Belgium, workshop on industrial challenges in the simulation of evolving interfaces: Mathematics, Computing, and Simulation for Industry (MACSINET) workshop, Vrije University. (international).

Invited Keynote and Plenary Presentations at Symposia
For invited keynote and plenary presentations at symposia, 100% were international in scope.

1. M. Sussman. (2009, July). Overcoming the surface tension time step constraint when computing incompressible two-phase flows. Keynote presentation in R. Rao, D. Noble, and T. Baer (chairs), CFD for free and moving boundaries. Symposium to be conducted at the meeting of the USNCCM X, Columbus, Ohio. (international).

Invited Presentations at conferences
For invited presentations at conferences, 100% were international in scope.

1. M. Sussman. (2009, August). An adaptive multi-phase flow solver for coupled-ocean atmosphere modeling. Paper to be presented at the workshop on free boundary/surface problems, Boulder, CO: NCAR. (international).

2. M. Sussman. (2007, November). An adaptive multi-phase flow solver for incompressible viscous and visco-elastic flows. Presentation at SAMSI workshop on interfaces, Raleigh-Durham, NC: SAMSI. (international).

3. M. Sussman. (2007, June). A scalable adaptive solver for simulating the break-up of a liquid jet in a cross-flow. Presentation at the workshop on atomization and spray, East Hartford, CT: United Technologies Research Corporation. (international).

4. M. Sussman. (2007, May). An adaptive multi-phase flow solver for incompressible viscous and visco-elastic flows. Presentation at Frontiers in Applied and computation mathematics (FACM 07), Newark, New Jersey: New Jersey Institute of Technology. (international).

5. *M. Sussman. (2005, June). High order VOF height fraction techniques for extracting curvature from the VOF function. Presentation at conference on free boundary problems, Coimbra, Portugal: University of Coimbra. (international).

6. *M. Sussman. (2001, May). An adaptive level set method for ship waves and underwater explosions/implosions. Presentation at IPAM Workshop on Geometrically Based Motions in Image Processing, Computer Vision, and Computer Graphics. Los Angeles, CA: IPAM (UCLA). (international).

7. *M. Sussman. (2001, January). An adaptive level set method for simulating ink-jet devices. Presentation at IMA hot topics workshop: Analysis and modeling of industrial jetting processes. Minneapolis, Minnesota: IMA. (international).

Contracts and Grants

Contracts and Grants Funded

1. M. Sussman. Acoustic cross-talk in jetting devices. Funded by Kodak. (2008). Total award: 5K

2. M. Sussman, G. Erlebacher, X. Wang, and D. Kopriva. SCREMS: High Performance Computing and Visualization. Funded by NSF. (2007). Total award: 115K

3. M. Sussman. A Computational study of the spray characteristics of a liquid jet atomized by cross-flowing air. Funded by NSF. (2007-2010). Total award: 322K

4. M. Sussman. Code enhancements to NFA. Funded by SAIC. (2007). Total award: 13K

5. M. Sussman. Numerical Modeling of underwater implosions. Funded by ONR. (2004-2006). FSU award: 55K

6. M. Sussman. U.S. Japan Cooperative Science: A computational study of bubble and drop dynamics in inelastic and viscoelastic non-Newtonian fluid systems. Funded by NSF. (2003-2007). Total award: 46K

7. *M. Sussman. Advanced Fluid Modeling Capability for Underwater shock analysis of Naval Ships, Phase II, STTR grant together with Weidlinger corporation. Funded by ONR. (2002-2004). FSU award: 120K

8. *M. Sussman and M.Y. Hussaini. Numerical methods for microscale and nanoscale multiphase flow in general geometries. Funded by NSF. (2001-2005). Total award: 100K

9. *M. Sussman. Advanced Fluid Modeling Capability for Underwater shock analysis of Naval Ships, Phase I and Phase I option STTR grant together with Weidlinger corporation. Funded by ONR. (2001-2002). FSU award: 40K

10. *M. Sussman. Numerical Modeling of vapor bubble creation and collapse in 3D general geometries. Funded by XEROX. (2000-2001). Total award: 10K

11. *M. Sussman. First-Year Assistant Professor award. Funded by FSU. (2000). Total award: 10K

12. #M. Sussman, E.G. Puckett, A. Edelson, A. Fannjiang, J. Gravner, D. Stuart. Mathematical Sciences Computing Research Environments. Funded by NSF. (1997). Total award: 40K

13. #M. Sussman and E.G. Puckett. Efficient, High Resolution, Numerical Methods for Free-boundary Problems with Surface Tension. Funded by NSF. (1997-2001). Total award: 60K.

Contracts and Grants Pending

1. M. Sussman, M.Y. Hussaini, R. van Engelen, X. Zou, A. Duffy. (2009). GPU Testing of Massively Parallel Hybrid Optimization Algorithms. Submitted to the DOE.

2. M. Sussman, M.Y. Hussaini, A. Duffy. (2009). Multiphase flow simulation and complex shape design under uncertainty; NRL program BAA 64-07-01, "High Performance Computing on Massively Parallel Architectures". Submitted to NRL.

Contracts and Grants Denied

1. M. Sussman. (2009). FRG: Collaborative Research: Modeling forcing and dissipation in the sea surface energy balance with application to microwave remote sensing of the sea surface and oceanography. Submitted to NSF.
2. M. Sussman and M.Y. Hussaini. (2008). Ship hull design via level set shape optimization techniques and a scalable multi-phase CFD solver. Submitted to NSF.
3. M. Sussman, M.Y. Hussaini, D. Kopriva. (2007). FRG: Collaborative Research: Efficient High Order Methods for Deterministic and Stochastic Problems in Flow Analysis and Control. Submitted to NSF.
4. M. Sussman, G. Erlebacher, X. Wang, and D. Kopriva. (2006). Improving high performance computing environment for research and education in mathematical sciences. Submitted to NSF.
5. M. Sussman. (2006). Simulation of liquid metal droplets from field emission. Submitted to NASA.
6. M. Sussman. (2005). High Performance Numerical Methods for Multiscale/multi-phase Flows. Submitted to NSF.
7. M. Sussman. (2005). Simulation of viscous and visco-elastic multiphase flows. Submitted to American Chemical Society (Petroleum Research Fund).
8. M. Sussman and M.Y. Hussaini. (2005). Multiscale Mathematics. Submitted to DOE.
9. M. Sussman. (2004). CAREER:Efficient and Accurate Numerical Methods for Moving Boundary Problems in Multi-Phase Flow. Submitted to NSF.
10. M. Sussman. (2003). High order numerical methods for computing chemically reacting flows with sharp flame fronts. Submitted to DOE.
11. M. Sussman, M.Y. Hussaini, W. Dewar, and T. Krishnamurti. (2000). New Mathematical and Physical Models of Coupled Atmosphere-Land-Ocean Circulation Models. Submitted to NSF.

SERVICE
 # = service before FSU * = service before last promotion

Florida State University

University

1. Committee Member, University Faculty Sabbatical Committee, (2006-2007,2009-2010).
2. Member, Faculty Senate, (2008-2009).

Department of Mathematics

1. Committee Member, Faculty Evaluation Committee (FEC), (2006-2007).
2. Committee Member, Curriculum Committee, (2008-2009).
3. Scheduler, Applied Math Seminar, (2007-2009).
4. Committee Member, numerical analysis qualifying exams (2000-2009).

The Profession

Editorial Board Membership

1. Editorial Board Member (2005-present). Fluid Dynamics and Materials Processing.

Guest Reviewer for Refereed Journals

1. (2000-present). Journal of Computational Physics, Journal of Fluid Mechanics, Journal of Scientific Computing, Physics of Fluids, Fluid Dynamics and Materials Processing, Physical Review E, Physics Letters A, Methods and Applications of Analysis, Numerical Heat Transfer, Computers and Fluids, Theoretical and Computational CFD, Graphical Models, International Journal of CFD, Journal of Computers and Structures, International Journal of Computers and Mathematics with applications, SIAM

Journal of Scientific Computing, ASME Journal of Fluids Engineering, CiSE Journal, Computer Methods in Applied Mechanics and Engineering (CMAME), Biophysical Journal, Journal of Computational Mathematics, Siggraph 2007, Discrete and Continuous Dynamical Systems, European Journal of Mechanics-B/Fluids, Numerical Methods for Partial differential equations (NMPDE), International Journal of Multiphase Flow, Philosophical Transactions of the Royal Society, International Journal of Heat and Mass Transfer.

Reviewer for Grant Applications

1. (2009). Participated on NSF panel.
2. (2008). Participated on NSF panel.
3. (2007). Participated on NIH panel.
4. (2006). Participated on NSF panel.
5. (2000-present). A number of NSF and DOE proposals.

Service to Professional Associations

1. *Conference/Symposia Organizer, AMS sectional meeting/Modeling and simulation of complex fluid systems, AMS (2004).
2. *Conference/Symposia Organizer, SIAM annual meeting/numerical methods for multi-phase/multi-fluid flow, SIAM (2001).

The Community

Service to the community

1. Vice President of Education, Seminole Toastmasters (2005-2009).

Consultation

Consultation

1. UTRC. Spray simulation methods. (2009-2011).
2. SAIC. Code Enhancements to NFA. (2007).