

Matthew Bronson de Stadler

Education

- Ph.D. Engineering Sciences (Mechanical Engineering), University of California San Diego 2013
Thesis title: High resolution simulation of the turbulent wake behind a sphere in a stratified fluid
- M.S. Engineering Sciences (Mechanical Engineering), University of California San Diego 2009
- B.S. Aerospace Engineering, University of Virginia. With highest distinction. 2007
Minor: Applied Mathematics.

Awards and Honors

- FLOW Postdoctoral Scholarship, KTH 2013-2014
- Gordon Scholar, UCSD 2010-2013
- Wally Schirra Memorial Scholarship, Achievement Rewards for College Scientists Foundation 2010-2013
- National Defense Science & Engineering Graduate Fellowship, Department of Defense (HPCMO) 2008-2011
- Jacobs School Fellowship, UCSD 2007-2010
- Sigma Gamma Tau Outstanding Aerospace Engineering Graduate, UVA 2007
- Virginia Space Grant Consortium Undergraduate Aerospace Research Scholarship 2006-2007
- Harold S. Morton Jr. Memorial Scholarship, UVA 2006

Experience

- Kungliga Tekniska Högskolan (Royal Institute of Technology), Stockholm, Sweden 09/2013-09/2014
Postdoctoral Researcher, Mechanics Department, Professor Dan Henningson
Worked on development of a virtual wind tunnel for high resolution simulation of the flow around a wing at high Reynolds number
- University of California San Diego, La Jolla, CA 09/2007-09/2013
Graduate Student Researcher, MAE Department, Professor Sutanu Sarkar
Developed numerical software and performed numerical simulations to study the turbulent wake behind a bluff body in a stratified fluid
- Gordon Scholar**, Jacobs School of Engineering 09/2010-09/2013
Participated in engineering leadership development program including courses, workshops, forums and hands-on activities to develop leadership skills
- Lawrence Livermore National Laboratory, Livermore, CA Summer 2007
Science and Engineering Technical Scholar, Institute for Scientific Computing Research
Developed a numerical simulation using Onsager's pancake approximation for fluid flow in a gas centrifuge

University of Virginia, Charlottesville, VA

2005-2007

Undergraduate Student Researcher, MAE Department, Professor Hossein Haj-Hariri
Investigated optimal geometries for a heat sink

Naval Research Laboratory, Washington, DC

Engineering Technician, Astrodynamics and Navigation Section,

Performed system integration support for a test of a new communications frequency Summer 2006

Modeled the communications link between a satellite and a ground network Summer 2005

Journal Articles

5. **Computation of the flow past a sphere at $Re = 3,700$: A comparison of uniform and turbulent inflow conditions**
Y. Bazilevs, J. Yan, M. B. de Stadler and S. Sarkar., *J. Appl. Mech.*, 81(12), 121003, 2014.
4. **Large Eddy Simulation of the near to intermediate wake of a heated sphere at $Re = 10,000$**
M. B. de Stadler, N.R. Rapaka and S. Sarkar, *Int. J. Heat Fluid Flow*, 49, 2-10, 2014.
3. **The spatial evolution of fluctuations in a self-propelled wake compared to a patch of turbulence**
A. Pal, M. B. de Stadler and S. Sarkar, *Phys. Fluids*, 25, 095106, 2013.
2. **Simulation of a propelled wake with moderate excess momentum in a stratified fluid**
M. B. de Stadler and S. Sarkar, *J. Fluid Mech.*, 692, 28-52, 2012.
1. **Effect of the Prandtl number on a stratified turbulent wake**
M. B. de Stadler, S. Sarkar and K. A. Brucker, *Phys. Fluids*, 22, 095102, 2010.

Conference Proceedings

3. **Large eddy simulation of the near wake of a heated sphere at $Re = 10,000$**
M. B. de Stadler and S. Sarkar, *Eighth International Symposium on Turbulence and Shear Flow Phenomena (TSFP8)*, Poitiers, France, 2013.
2. **Self-propelled wakes at different Froude numbers in a stratified fluid**
M. B. de Stadler and S. Sarkar, *Seventh International Symposium on Turbulence and Shear Flow Phenomena (TSFP7)*, Ottawa, Canada, 2011.
1. **Simulation of a self-propelled wake with moderate excess momentum in a homogeneous fluid**
M. B. de Stadler and S. Sarkar, *41st AIAA Fluid Dynamics Conference and Exhibit*, Honolulu, HI, 2011.

Conference Presentations

12. **Towards a Virtual Wind Tunnel - Fluid Simulations in the SeRC Exascale Flagship**
M. B. de Stadler, *Big Data and e-Science in Medical Science - 5th Annual Swedish e-Science Research Centre Meeting*, Stockholm, Sweden, 2014.
11. **Large eddy simulation of the near wake of a heated sphere at $Re = 10,000$**
M. B. de Stadler and S. Sarkar, *Eighth International Symposium on Turbulence and Shear Flow Phenomena (TSFP8)*, Poitiers, France, 2013.
10. **Buoyancy effects in stratified flow past a sphere at $Re=3,700$**
M. B. de Stadler and S. Sarkar, *65th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, San Diego, CA, 2012.

9. **A self-propelled wake as a patch of grid turbulence?**
M. B. de Stadler and S. Sarkar, *64th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, Baltimore, MD, 2011.
8. **Self-propelled wakes at different Froude numbers in a stratified fluid**
M. B. de Stadler and S. Sarkar, *Seventh International Symposium on Turbulence and Shear Flow Phenomena (TSFP7)*, Ottawa, Canada, 2011.
7. **Simulation of a self-propelled wake with moderate excess momentum in a homogeneous fluid**
M. B. de Stadler and S. Sarkar, *41st AIAA Fluid Dynamics Conference and Exhibit*, Honolulu, HI, 2011.
6. **Simulation of a self-propelled wake with small excess momentum in a stratified fluid**
M. B. de Stadler and S. Sarkar, *5th Southern California Symposium on Flow Physics*, Los Angeles, CA, 2011.
5. **Simulation of a self-propelled wake with small excess momentum in a stratified fluid**
M. B. de Stadler and S. Sarkar, *63rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, Long Beach, CA, 2010.
4. **Simulation of a stratified self-propelled wake with excess momentum**
M. B. de Stadler and S. Sarkar, *4th Southern California Symposium on Flow Physics*, Irvine, CA, 2010.
3. **The Effect of the Prandtl number on the turbulent stratified wake**
M. B. de Stadler, S. Sarkar and K. A. Brucker, *62nd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, Minneapolis, MN, 2009.
2. **Optimization of the geometry of a heat sink**
M. B. de Stadler, *ASME District F Student Conference*, Columbia, SC, 2007.
1. **Optimization of the geometry of a heat sink**
M. B. de Stadler, *AIAA Region I-MA Student Conference*, Hampton, VA, 2007.

Seminars

4. **Spatially-evolving flow past a sphere in a stratified fluid at $Re = 10,000$, $Fr = 3$: body to intermediate wake**
M. B. de Stadler, *Applied Physics Laboratory, University of Washington*, Seattle, WA, 2013.
3. **High resolution simulations of stratified turbulent wakes**
M. B. de Stadler, *Department of Mechanics, Royal Institute of Technology (KTH)*, Stockholm, Sweden, 2013.
2. **High resolution simulation of the turbulent wake behind a sphere in a stratified fluid**
M. B. de Stadler, *Jacobs Undergraduate Mentorship Program: Spring Large Group Meeting, UCSD*, La Jolla, CA, 2012.
1. **High resolution simulation of the turbulent wake behind a sphere in a stratified fluid**
M. B. de Stadler, *Jacobs Innovators Forum: Modeling and Simulation, UCSD*, La Jolla, CA, 2012.

Posters

6. **A comparative study of a spatially evolving self-propelled wake and a patch of turbulence**
A. Pal, M. B. de Stadler and S. Sarkar, *65th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, San Diego, CA, 2012.

Also shown at: *UCSD Jacobs School of Engineering 32nd Annual Research Expo*, La Jolla, CA, 2013.

5. **Simulation of spatially evolving flow past a sphere in a stratified fluid**
M. B. de Stadler and S. Sarkar, *UCSD Jacobs School of Engineering 31st Annual Research Expo*, La Jolla, CA, 2012.
4. **Simulation of a self-propelled wake with excess momentum in a stratified fluid**
M. B. de Stadler and S. Sarkar, *Department of Defense High Performance Computing Modernization Program Users Group Conference 2011*, Portland, OR, 2011.
Also shown at: *UCSD Jacobs School of Engineering 30th Annual Research Expo*, La Jolla, CA, 2011.
3. **Simulation of the wake of an accelerating body in a stratified fluid**
M. B. de Stadler and S. Sarkar, *Department of Defense High Performance Computing Modernization Program Users Group Conference 2010*, Schaumburg, IL, 2010.
Also shown at: *UCSD Jacobs School of Engineering 29th Annual Research Expo*, La Jolla, CA, 2010.
2. **Onsager's pancake approximation for fluid flow in a gas centrifuge**
M. B. de Stadler, *Lawrence Livermore National Laboratory Summer Research Symposium*, Livermore, CA, 2007.
1. **Optimization of the geometry of a heat sink**
M. B. de Stadler, *Virginia Space Grant Consortium Student Research Conference*, Williamsburg, VA, 2007.

Technical Reports

1. **A finite-difference numerical method for Onsager's pancake approximation for fluid flow in gas centrifuges**
M. B. de Stadler and K. Chand, *UCRL-TR-236581*, Lawrence Livermore National Laboratory, 2007.

Theses

2. **High resolution simulation of the turbulent wake behind a sphere in a stratified fluid**
M. B. de Stadler, *PhD Thesis*, UCSD, 2013.
1. **Optimization of the geometry of a heat sink**
M. B. de Stadler, *Senior Thesis*, UVA, 2007.

Teaching Experience

Mentored new PhD student in my research group, UCSD.	06/2011-2013
Teaching assistant, Flow and Transport in the Environment, UCSD.	Fall 2011
Mentored undergraduate student in independent study course, UCSD.	2009-2010
Teaching assistant, Aerodynamics Laboratory course, UVA.	Spring 2007

Service

- Referee for Journal of Fluid Mechanics
- Discusser for 30th Symposium on Naval Hydrodynamics

Outreach

Jacobs Undergraduate Mentorship Program , Mentored a group of 1 senior level undergraduate and 4-6 freshman.	2011-2013
San Diego Science Festival , Spoke with K-12 students about life as a scientist/engineer.	2011-2013
Enspire , Led lab tours for middle school students.	2011,2013
Envision , Led lab tours for high school girls interested in engineering and computer science.	2011-2013

Membership in Academic Societies

American Physical Society

Sigma Gamma Tau

Tau Beta Pi

Grants

PRACE preparatory access grant (1.1 million CPU hours)	2014
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