

# Jason F Hammond

## Curriculum Vitae

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### Research Interests

- Partial Differential Equations
  - Numerical and Analytical
- Fluid Dynamics
  - Immersed Boundary Method
  - Fluid/Structure interactions
- Mathematical Biology
  - Biofilm Modeling

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### Education

- Aug 2006–  
Present **PhD in Applied Mathematics**, *University of Colorado*, Boulder, CO.  
Current Cumulative GPA: 3.95; Expected Graduation: May 2012;  
Advisor: David Bortz, Applied Math;
- Aug 2006–  
Dec 2008 **MS in Applied Mathematics**, *University of Colorado*, Boulder, CO.  
Cumulative GPA: 3.92;
- Aug 2001–  
May 2005 **BS in Mathematics and BS in Physics**, *Texas State University*, San Marcos, TX.  
Graduating GPA: 4.00;

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### Work Experience

- Jan 2010–  
Present **Graduate Research Assistantship**, *University of Colorado*.  
Funded by NSF grant PHY-0940991 to Professor Bortz;
- Aug 2006–  
Dec 2009 **Graduate Teaching Assistantship**, *University of Colorado*.  
Calculus I,II&III, Differential Equations, MATLAB;
- Summer 2008,  
2009 **Instructor**, *University of Colorado*.  
Differential Equations and Linear Algebra;
- Aug 2005–  
May 2006 **Graduate Instructional Assistant**, *Texas State University*.  
Pre-Algebra and Calc I;
- Aug 2004–  
May 2005 **Research Lab Assistant**, *Texas State University*.  
Assisted Carlos J. Gutierrez with research on thin film behaviors;
- Sep 2002–  
May 2004 **Tutor**, *Student Learning Assistance Center, Texas State University*.  
Mathematics, Physics, and Chemistry;

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## Publications

J. F. Hammond and D. M. Bortz. Analytical solutions to Fisher's equation with time-variable coefficients. *Applied Mathematics and Computation*, 218(6):2497 – 2508, 2011.

J. F. Hammond, E. J. Stewart, J. G. Younger, M. J. Solomon, and D. M. Bortz. Modeling and simulation of biofilm fragmentation in fluid flow. Submitted Nov 2011.

J. F. Hammond, J. G. Younger, M. J. Solomon, and D. M. Bortz. The effect of viscosity on biofilm fragmentation in fluid flow. In Preparation.

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## Presentations

- March 2011 **15<sup>th</sup> Copper Mountain Conference on Multigrid Methods**, Copper Mtn, CO.  
"Modeling and Simulation of Biofilm Separation in Fluid Flow;"
- Aug 2010 **Workshop for Young Researchers in Mathematical Biology**, *Mathematical Biosciences Institute at The Ohio State University*, Columbus, OH.  
Poster "Analytical Solutions to Fisher's Equation with Variable Coefficients;"
- April, 2010 **Math Biology Group Seminar**, *University of Colorado*, Boulder, CO.  
"Analytical Solutions With Stability Analysis to Fisher's Equation with Variable Coefficients;"
- Aug 2009 **Summer Graduate Program**, *Mathematical Biosciences Institute at The Ohio State University*, Columbus, OH.  
Team project with presentation "Chemotaxis of E. Coli;"
- July 2009 **2009 SIAM Annual Meeting**, Denver, CO.  
Contributed Talk "Spatial Propagation of Alleles in a Human Population;"
- April, 2009 **Math Biology Group Seminar**, *University of Colorado*, Boulder, CO.  
"Introduction to Spatial Genetics;"

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## Honors/Distinctions

- 2005 **Mitte Circle of Excellence Award.**  
Mitte foundation award given to one graduating undergraduate senior each year who has excelled in community service as well as scholarship;
- 2005 **Most Outstanding Undergraduate Student Award of the College of Science.**  
Annual award given to a College of Science student who possesses outstanding characteristics in scholarship and service;
- 2005 **Outstanding Graduating Physics Major.**  
Annual award given to the top graduating physics major;
- 2004 **R. H. Bing Award.**  
Annual award given to the student with the highest GPA in the Math Dept;
- 2002 **Golden Key International Honour Society.**  
An academic honors organization;
- 2001–2005 **Roy F. and Joann Cole Mitte Scholarship.**  
Texas State's premier academic scholarship;

2001 **Other Scholarships.**  
MLK/Rivera Scholarship, LBJ continuing scholarship, Solectron Scholarship;

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## Courses Taught

Summer 2008, Summer 2009 **Differential Equations with Linear Algebra (APPM2360)**, *University of Colorado*, Boulder, CO.

Introduces ordinary differential equations, systems of linear equations, matrices, determinants, vector spaces, linear transformations, and systems of linear differential equations;

Spr 2007, Sum 2007, Fall 2007, Fall 2008, Spr 2009 **Differential Equations Lab Course (APPM 2460)**, *University of Colorado*, Boulder, CO.

1 credit hour companion course to APPM 2360 listed above, in which basic differential equation solving tools are learned in Mathematica and MATLAB;

Fall 2005 **Basic Mathematics (Math 1311)**, *Texas State University*, San Marcos, TX.

A preparatory course for college algebra. Topics include linear equations and inequalities, rational expressions, exponents and radicals, quadratics and word problems;

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## Volunteer Activities:

○ Habitat for Humanity Houses: Helped build three habitat homes in San Marcos, TX (150+ hours);

○ Hunger and Homelessness Week: participated in three Hunger and Homelessness Weeks, in which I helped build shanties to display homelessness facts in the University quad;

○ Special Olympics: helped coordinate and run a sporting event;

○ Cattle Baron's Ball (2004 and 2005): Sold tickets and items to raise money for Cancer Research;

○ Other volunteer events: Crop Walk, river cleanup, animal shelter, Bobcat Build (2004,2005), Deloitte and Touche Impact Day(2007);

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## Computer skills

OS Linux, Windows

Programming MATLAB, C/C++, Mathematica

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## References

○ David Bortz, Dept. of Applied Math, University of Colorado-Boulder, [dmbortz@colorado.edu](mailto:dmbortz@colorado.edu);

○ Anne Dougherty (Teaching Reference), Dept. of Applied Math, University of Colorado-Boulder, [anne.dougherty@colorado.edu](mailto:anne.dougherty@colorado.edu);

○ Gunnar Martinsson, Dept. of Applied Math, University of Colorado-Boulder, [martinss@colorado.edu](mailto:martinss@colorado.edu);

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## Other Interests

In my free time I enjoy cycling, running, playing trumpet, basketball, racquetball, martial arts, softball, and travelling to foreign countries.