



David Lloyd Sondak

Graduate Institution: Rensselaer Polytechnic Institute

Graduate Discipline: Aerospace Engineering

Hometown: Gettysburg, PA

Relevant SC Research: Advanced Scientific Computing Research

Research Interest:

David works on developing large eddy simulation turbulence models for incompressible magnetohydrodynamics. He has a keen interest in the physics of plasmas and engineering with them. There is a wide array of examples of challenges involving plasmas. As humans continue to explore the space outside Earth, we will need to predict solar storms and their effect on our space-bound vessels and instruments. At home, the pursuit of a clean source of energy has led to the development of nuclear fusion.

Turbulence is a phenomenon that can develop in all fluids. Due to the intractable mathematical nature of the equations governing plasma dynamics, engineers and scientists must use computers to predict the behavior of these fluids. However, turbulence poses considerable difficulties for even today's most powerful supercomputers because of its multiscale nature. Turbulence models aid our computers in simulating interesting and important phenomena. David's interest in developing turbulence models stems from a desire to better understand the roles plasmas play in our universe and how we can make efficient use of them in designing systems that improve our everyday lives.

About Me:

David is a PhD candidate at Rensselaer Polytechnic Institute (RPI). He was born and raised in Gettysburg, Pennsylvania and received a Bachelor of Science degree

in mechanical engineering from Lehigh University in Bethlehem, Pennsylvania in 2008. Following graduation, he backpacked around the US (as well as a few cities in Canada) for a month before entering graduate school in the Fall of 2008. In the Spring of 2011 he received a Master of Science degree in applied mathematics.

David is especially passionate about education. He believes that an education should be afforded to any person and that all people should consider themselves worthy of an education. His career goal is to become a professor and to perform educational outreach work in addition to his research interests. Presently, in addition to his research, he works with the Sponsor-a-Scholar mentor program at a local high school which involves mentoring an underprivileged high school student who shows promising academic potential. He is also involved with the Engineers Ambassadors program at RPI as a mentor to undergraduate engineering students who wish to perform outreach work in high schools. David also serves on the Graduate Research Forum committee in his department which organizes graduate student talks for the department during the semester.

David is a member of the Society of Industrial and Applied Mathematics (SIAM), the American Physical Society (APS), and the American Society of Mechanical Engineers (ASME).

He has various hobbies which include: soccer (both watching and

playing), skiing, hiking/backpacking, various outdoor adventures (whitewater rafting, for example), reading books (fiction/science fiction, fantasy, science/math), and gardening. Right now his garden contains tomatoes, green onions, green peppers, okra, lettuce, green beans, and peas. He also loves animals and is always happy to talk with others about their pets.



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