

Carson Cook



Graduate Institution: University of Wisconsin

Location: Madison, WI

Graduate Discipline: Plasma Physics

Hometown: Chippewa Falls, WI

Research Interests:

My research area is computational plasma physics and controlled nuclear fusion. Currently I am working on a code called SIESTA with Drs. Steven Hirshman and Raul Sanchez of Oak Ridge National Laboratory. SIESTA is a 3-D magnetohydrodynamic code used to model areas known as magnetic islands and stochastic regions in toroidal plasma confinement equilibrium configurations. I am very interested in using computational techniques to analyze tokamaks and stellarators (magnetic confinement devices) and design the next generation of optimized devices. Hopefully this research can bring us closer to realizing the dream of fusion energy.

I am also very interested in differential geometry and massively parallel scientific computing. I use differential geometry in my SIESTA research as the very complicated magnetic geometry of confinement devices (particularly stellarators) necessitates the use of complex curvilinear coordinate systems. SIESTA will eventually be used to model extremely large systems, requiring the use of parallel MPI computing. I find parallel programming to be very interesting, difficult, and rewarding. Also, I am interested in optimizing mathematical libraries (such as BLAS and LAPACK).

About me:

I work at the Helically Symmetric Experiment (HSX) at the University of Wisconsin-Madison. HSX is a quasi-helically symmetric stellarator. I am a member of the student branches of IEEE and SIAM. I am also a member of the electrical engineering honor society, Eta Kappa Nu (HKN).

In my free time, I enjoy reading, lifting weights, running, sports, cooking, fishing, and the outdoors.

Someday I plan to be a government scientist or a professor in computational plasma physics. I love both the physics and computer science aspects of developing codes to simulate plasma behavior.



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