Special Guest Lectures

Cyberinfrastructure for Numerical Relativity (and Beyond)

Gabrielle Allen, National Science Foundation, LSU

Program Director, Associate Professor

Coates Hall 256
October 03, 2011 - 02:00 pm

Abstract:
Accurately modeling astrophysical systems that are governed by Einstein's Equations of General Relativity, such as black hole, stellar core collapse, or gamma ray bursts, require the use of cutting edge computational resources and software. In this talk, Dr. Allen will describe how numerical relativity has motivated and led to the development of the Cactus Framework - an open, collaborative component framework and set of tool kits for scientific computing, as well as numerous advanced scenarios exploiting Grid and distributed computing, high speed networks, and advanced visualization. She will describe how this work has led to a new software effort in numerical relativity, the Einstein Toolkit Consortium, which is developing and supporting the software for state-of-the-art simulations involving general relativistic “magnetohydrodynamics” and working toward a sustainable model for software development. Finally, Dr. Allen will discuss the importance of national resources in supporting these and reflect on current and future needs in scientific computing infrastructure.

Speaker's Bio:
Gabrielle Allen is a Program Director at the National Science Foundation in the Office of Cyberinfrastructure. She is also an Associate Professor in Computer Science at Louisiana State University, and a faculty member at the Center for Computation & Technology. Gabrielle received a PhD in computational astrophysics from Cardiff University in 1993. Before moving from Europe to Louisiana State University in 2003, Gabrielle was the lead of the computer science area of the Max Planck Institute for Gravitational Physics (AEI) in Potsdam, Germany where she researched and developed techniques for high performance and grid computing. At the AEI, Gabrielle was the lead of the Cactus Code project and a PI for the European GridLab project. At LSU, Gabrielle played a major role in establishing the Center for Computation and Technology, led the cyberinfrastucture component of the statewide NSF research infrastructure improvement award, and continued to led the Cactus Code project. She has been deeply involved in a number of large, collaborative projects integrating computer science, scientific computing and the computational sciences across diverse fields including petroleum engineering, coastal modeling, computational fluid dynamics, numerical relativity, computational chemistry and computational biology.

Center for Computation & Technology
2003 Digital Media Center • Telephone: +1 225/578-5890 • Fax: +1 225/578-8957