



## CCT Weekly March 13- March 19, 2011

### News

[Press Releases](#)  
[Event Announcements](#)  
[CCT Weekly](#)  
[Grants and Funding](#)  
[Student News](#)  
[Archived News](#)

[CCT Weekly, March 15, 2011](#)

### LSU receives \$1.35 Million to Develop the Coastal Hazards Collaboratory in the Northern Gulf Coast

Researchers in Louisiana, Mississippi, and Alabama are leveraging their unique partnerships, proximity, and significant prior investments in cyberinfrastructure to advance science and engineering of coastal hazards of the northern Gulf Coast.

Funded by the NSF (National Science Foundation), this consortium, called the Northern Gulf Coastal Hazards Collaboratory or NG-CHC, has recently formed to: advance economic opportunities for our citizens by reducing risks to coastal vulnerabilities; catalyze collaborative research via enhanced cyberinfrastructure that will potentially address problems such as engineering design, coastal system response, and risk management of coastal hazards; and enhance the research competitiveness of the Gulf region.

The northern Gulf Coast is essential to the sustainability of economically important coastal fisheries, marine transportation, energy development, and national defense. The NG-CHC has the opportunity to capitalize on strong cyberinfrastructure and current coastal hazards research infrastructure to address issues of national importance regarding the sustainability of the Gulf Coast. The challenge is to develop a framework and strategies for organizing the region's resources in a manner that transcends state line boundaries.

Current investments include high-bandwidth optical networks, HPC systems, large data storage, data archives, middleware, visualization resources, and connections to national research networks including the National LambdaRail and Internet2. The NG-CHC will broaden and strengthen these cyberinfrastructure resources to include training for the next generation of researchers.

More specifically, cyberinfrastructure tools and services need to work with computationally demanding models and vast observational data sets. The new collaboratory will create cyberinfrastructure tools and services and demonstrate three modeling environments that allow scientists to access and use data from observational data systems located at university, government, and private industry in the northern Gulf Coast.

For example, one of the grand challenges for earth system science is to characterize dynamic environmental processes at appropriate space and time scales with integrated observation networks and models. Even with the current high-capacity cyberinfrastructure, this region lacks a system to integrate these data inventories into information and knowledge that will reduce risks to coastal hazards. The challenge includes the ability to couple models, invoke dynamic algorithms based on streams of sensor and satellite data, locate appropriate data and computational resources, create necessary workflows associated with different simulation demands, and provide visualization tools for analysis of results.

"LSU has played the leading role in the development of this Coastal Hazards Collaboratory, a consortium of 10 universities in the Gulf region," said Q. Jim Chen, LSU associate professor of LSU's Department of Civil & Environmental Engineering and the Center for Computation & Technology. "Close collaborations among civil engineers, earth system scientists, and computer scientists are the key to the success of this project."

"With these planned investments, the existing computational and research capabilities of Louisiana will significantly improve, and the ability to collaborate with other researchers in the Gulf Region will be enhanced", said Honggao Liu, deputy director of LSU's Center for Computation & Technology and director of LSU's High Performance Computing. "It's so vitally important for our state--protecting the coast means protecting Louisiana's economy and national economic output."

The LSU consortium members are Qin Jim Chen; Honggao Liu; Patrick Hesp, professor of LSU's Department of Geography & Anthropology; and Steven Brandt, research consultant, Center for Computation & Technology.

For more information on the LSU Center for Computation & Technology's research projects, visit: [www.cct.lsu.edu](http://www.cct.lsu.edu).

### CCT Spotlight: Randy Hall

Randy Hall is a Professor of Chemistry and is an active member Materials World Focus Area at the CCT. Randy was born in Oakland, California, but grew up in Terra Linda, California. He is married and has one son.

Randy's research involves using statistical mechanics to study systems, ranging from the bulk to clusters of just a few atoms. The goal is to elucidate, through the judicious use of physical models and state-of-the-art calculations, the factors that govern the behavior of these systems. The different areas of his research include structure, thermodynamics, and kinetics of combustion generated nanoparticles; dynamics and aging of glassy materials; and path integral formulation of quantum mechanics.

When asked why he chose this field of science, Randy answered that was the "biggest intellectual challenge I could find."

For fun, Randy likes to listen to music, play Xbox, and follow the San Francisco Giants baseball team and San Francisco 49ers football team. He is considering the possibility of getting back into Tae Kwon Do.

Randy's prescription for life is "The answer is 42," which is, according to The Hitchhiker's Guide to the Galaxy comic science fiction series, the Answer to the Ultimate Question of Life, the Universe, and Everything.

### Pats on the back:

- A message from Joel E. Tohline: "All CCT Faculty and Staff: I want to give a standing ovation to everyone who contributed to making the TechPAWLooza event successful yesterday. CCT was, without a doubt, star of the show! You showcased a multitude of high-quality educational, research, and economic development activities that are being led by the CCT. It was both a fun and enlightening event. Judging by the ever-present crowds around our CCT booths, I suspect that many others from across LSU shared this sentiment. Extremely well done!"

- Thomas Sterling gave an invited presentation at the SIAM CS 11 Conference as part of the Mini-symposium on the topic of "Toward Exascale in Defense Applications." Sterling's half hour presentation was entitled "The ParelleX Execution Model for Exascale Computation" and discussed the challenges to achieving Exascale performance before the end of this decade. The presentation described the ParelleX execution model to an audience of applied mathematicians and presented results from experiments with an AMR code.

- Thomas Sterling visited the Livingston Parish Literacy and Technology Center, which conducts classes for high school students of Livingston Parish in technology areas including computers and applications. Sterling gave two separate two-and-half hour presentations

to two groups of approximately 20 students each. The presentations were entitled: "Opportunities in Computer Science." During these talks Sterling described curricula at LSU Department of Computer Science, the resources and opportunities for undergraduate students at LSU, and some of the exciting professional opportunities that can be pursued with a degree of computer science.

#### **CCT in the News:**

##### **LSU Receives \$1.35M to Develop the Coastal Hazards Collaboratory in the Northern Gulf Coast**

Source: [HPCwire](#), [LSU Office of Communications & University Relations](#), [Baton Rouge Business Report](#), [Noodls](#), [2theadvocate](#)

#### **Researchers create 'collaboratory'**

Source: [LSU Reveille](#)

#### **Lectures this week:**

##### **TUESDAY—**

There will be a lecture on "[Adaptive Multiscale Molecular Dynamics Simulations of Soft Matter](#)" by Steven O. Nielson, University of Texas at Dallas. The lecture will take place Tuesday, March 15 at 2:00 P.M. in 338 Johnston Hall.

##### **WEDNESDAY—**

There will be a lecture on "[A Parametric FEM For Geometric Problems: Techniques & Applications](#)" by Miguel Sebastian Pauletti, Texas A&M University. The lecture will take place Wednesday, March 16 at 3:30 P.M. in 338 Johnston Hall.

##### **FRIDAY—**

There will be a PETE Seminar on "[Fluid Flow Simulations Of Diverse Petroleum Engineering Processes At The Rock Pores-, System Components- And Reservoir Field- Scales](#)" by Mayank Tyagi, LSU. The lecture will take place Friday, March 18 at 10:30 A.M. in 2427 Taylor Hall.

#### **Please Note:**

- The CCT REU program has extended the deadline for applications to March 15th. For more information or to see details on how to apply, please visit <http://reu.cct.lsu.edu/>.
- National Student Employment Week will be celebrated April 10-16, 2011. We would like to put forward a CCT candidate for LSU's Student Employee of the Year. If you are supervising an exceptional student employee, in either an administrative or research role, you are encouraged to fill in the nomination form (request from Debra), write a nomination letter, and forward them both to Debra ([debra@cct.lsu.edu](mailto:debra@cct.lsu.edu)) by 4:00 PM, Tuesday, March 15. If a suitable candidate is found, that person will not only be nominated by CCT for LSU's Student Employee of the Year, but will also be named the CCT Student Employee of the Year and given a certificate. A committee will review all nominations, and one student will receive recognition as LSU's Student Employee of the Year along with a \$500 scholarship. The winner will be announced at a reception held during National Student Employment Week.
- The 4th Annual LBRN Computational Biology Workshop will take place at LSU March 18-19, 2011. It will focus on High Throughput Simulations and Data Analytics. The objective of this workshop will be to create an awareness of the BBC core offerings at the state level. These offerings include: High Performance Computing, Data Mining and Statistical Consulting, and Data Visualization Initiatives. For more information visit <http://lbrn.lsu.edu/urls/cw2011>.
- NanoDays will be held Saturday, March 26, 2011 at The Highland Road Park Observatory and Saturday, April 2, 2011 at the Louisiana Art and Science Museum. NanoDays is a national event of educational programs about nanoscale science and engineering coordinated by the Nanoscale Informal Science Education Network. This year, NanoDays events will take place at more than 200 science museums, research centers and universities across the country and will feature several hands-on activities for children of all ages. For more info, visit <http://www.bro.lsu.edu/> & <http://www.lasm.org/exhibits/events.shtml>
- Juana Moreno is in need of volunteers for NanoDays, Saturday, March 26, 2011 and Saturday, April 2, 2011. If you are interested, please contact her at [moreno@cct.lsu.edu](mailto:moreno@cct.lsu.edu).
- The AVATAR MHI will host a pizza night Monday, March 21st at 5:30 p.m. in the Engineering Annex Bldg, Frank Walk Presentation Room 140. They will be promoting the DMART and DMTEC Minors and recruiting new students. This will be an informational event with AVATAR faculty and local vendors (such as EA Games) speaking and answering questions about the curriculum and ways these minors can benefit students now and after graduation. Contact Lea Anne Couvillion with any questions at [leanne@cct.lsu.edu](mailto:leanne@cct.lsu.edu).
- Registration is now open for "Alice in Computation Land Summer Camp," June 13-17, 2011. The camp is a five-day workshop, sponsored by CCT, for girls entering grades 6-8 who are interested in learning more about computational science and technology. For more information and to register, visit <http://www.cct.lsu.edu/CampAlice>.
- Prior approval is required for Special Meal Requests. Employees who make meal purchases without prior approvals may find that they must cover the cost of any monies spent for an unapproved event out of pocket, especially now that state funds are under a spending freeze. Please contact Susie Poskonka ([susie@cct.lsu.edu](mailto:susie@cct.lsu.edu)) prior to any special meal with visitor(s) to file the appropriate request for approval. Prior approval could take up to one week, so please plan accordingly.
- Please remember to send your news concerning grants, awards, conferences, or other pertinent information to CCT Event Coordinator Jennifer Claudet at [jennifer@cct.lsu.edu](mailto:jennifer@cct.lsu.edu).
- Follow CCT with social media to access photos and see news, events or updated information. These pages are public; you do not need an account to view the information.
  - o [Facebook group](#) : LSU Center for Computation & Technology
  - o [Twitter](#) : LSUCCT
  - o [YouTube channel](#) : LSUCCT

#### **Upcoming Grant Deadlines:**

**Note:** Please check the [CCT deadline Web site](#), since it is updated daily.

[Cyberinfrastructure Training, Education, Advancement, and Mentoring for Our 21st Century Workforce \(CI-TEAM\)](#)

March 16 2011 10:00 am

At Most \$ 1,000,000.00 available

[Cyber-Physical Systems \(CPS\)](#)

March 21 2011 10:00 am

At Most \$ 5,000,000.00 available

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