



**November 27 – December 3, 2011**

### **LA-SiGMA and LSU CCT Host Summer Programs to Impact STEM Education in Louisiana**

The Louisiana Alliance for Simulation-Guided Materials Applications (LA-SiGMA, a statewide consortium of universities) and the LSU Center for Computation & Technology (CCT) welcomed 20 undergraduate and high school students, along with six high school teachers, to conduct research at the LSU campus this summer. Program participants worked with faculty on cutting-edge research in materials and computational science.

LA-SiGMA and CCT combined their "Research Experiences for Undergraduates (REU)" programs, both funded by the National Science Foundation (NSF). These nine-week programs host undergraduates and high school students from around Louisiana and the country. The students joined research teams and were trained to conduct scientific research. The research projects included enhancing current high performance computing (HPC), designing materials to store hydrogen and to improve electronic devices, improving drug delivery materials, creating an interactive and customizable meta-instrument, interactive digital music applications on mobile devices, and novel tangible interfaces.

In addition, Southern University LA-SiGMA funds sponsored three high school teachers from the Louisiana School for Math, Science & the Arts to participate in a "Research Experiences for Teachers (RET)" program. RET teachers participated alongside REU and graduate students in research projects at LSU. Their projects involved methods of incorporating high performance computing into their high school chemistry, math, and physics classes.

As part of LA-SiGMA's initiative to reach out to high schools, three teachers from LSU's LaMSTI program were supported. The Louisiana Math and Science Teacher Institute (LaMSTI), also funded by NSF, is a "program developed to benefit existing science and math teachers in the East Baton Rouge Parish area and prepare them for service as lead teachers, mentors, and coaches," Professor James Madden, co-director of the LSU Cain Center and director of the LaMSTI program, explained. LaMSTI students receive a Master of Natural Sciences degree after successful completion of the program.

Professors Mark Jarrell and Randall Hall, leads for LA-SiGMA at LSU, stated "computational science and engineering are now recognized by nearly all national and international science societies as a third method of scientific inquiry, coequal with

experiment and theory. Computational methods are also an essential part of technology and even manufacturing. As such, it is imperative for the economic future of Louisiana and the nation that we help excite and entice the best and brightest students in Louisiana to pursue careers in STEM disciplines." They continued, "in partnership with the Louisiana School for Math, Science, & the Arts, LA-SiGMA is helping to introduce state-of-the art computational methods in chemistry, physics, and mathematics high school classrooms to build the intellectual infrastructure necessary to position Louisiana as a major player in computational science and technology. LA-SiGMA, through its REU program, is exposing outstanding undergraduates to computational methods in materials science that will help expand their future educational and professional opportunities."

CCT faculty Juana Moreno, Department of Physics & Astronomy, and Brygg Ullmer, Department of Computer Science, leads of the CCT REU program, stated, "there is a great need of attracting more students to careers in STEM disciplines. In particular, computational science will only fulfill its full potential if advances in education and training of the workforce accompany the advances in hardware funded by the NSF cyberinfrastructure initiative. Our program combines individual training with student immersion in a multidisciplinary research group to provide a rich research experience." Moreno and Ullmer added "even though our program only began last summer, our students are winning national recognition. One of our 2010 students received the best poster award in the undergraduate category during the TeraGrid 2010 conference, while another was awarded an NVIDIA internship this summer. We are very proud of our students."

Participants of both the REU and the RET gave rave reviews of their experiences and the quality of learning that was available to them. Overall, the experience has either encouraged them to further their education using some form of computational sciences, or it has opened new pathways for their current curriculum strategies.

Dr. Chris Hynes, chemistry teacher at the Louisiana School for Math, Science, & the Arts, and a LA-SiGMA RET participant, said, "I have a Ph.D. in chemistry and have been teaching for about 20 years. I was not really convinced that HPC could have a sustained, meaningful contribution to how I teach chemistry. But once I experienced the multi-faceted projects that use HPC, I realized it could be used at a variety of levels. Overall, my participation in the LA-SiGMA program has been career altering."

Katelyn Kufahl, senior at the University of Wisconsin and CCT REU participant, said, "I feel that this experience has done nothing less than revolutionize the course of my education. I now recognize that I want to go to graduate school in a computational discipline and continue participating in related research. Here, I have found a wealth of skills and knowledge in the field, met many interesting and successful professionals, and kindled in myself a new interest - even a passion, perhaps. All things considered, the program far exceeded even my wildest expectations."

The CCT REU program "Interdisciplinary Research Experience in Computational Sciences" is funded by the National Science Foundation's Office of Cyberinfrastructure.

Funding for LA-SiGMA activities is from a \$20 million cooperative agreement between the National Science Foundation and the Louisiana Board of Regents' EPSCoR program. LA-SiGMA member institutions are Grambling University, Louisiana State University, Louisiana Tech University, Southern University, Tulane University, University of New Orleans, and Xavier University. LA-SiGMA hosts REU programs at six of the schools. Staff from the CCT and LA-SiGMA provided valuable support; in particular, Dr. Bety Rodriguez-Milla, Kathy Traxler, Leigh Townsend, and Shelley Lee were crucial for the success of the programs.

For more information about the La-SiGMA program, visit: <http://reu.lasigma.loni.org/>.  
For more information on the CCT REU, visit: <http://reu.cct.lsu.edu/>.

### **Lectures this week:**

#### ***TUESDAY--***

There will be a Computational Mathematics Seminar Series lecture on [“An Adaptive Preconditioned Nonlinear Conjugate Gradient Method With Limited Memory”](#) by Hongchao Zhang, LSU. The lecture will take place Tuesday, November 29 at 3:30 pm in 338 Johnston Hall.

#### ***THURSDAY--***

There will be a Tech Talk Series lecture on [“F5 - Fiberbundle HDF5”](#) by Werner Benger, LSU. The lecture will take place Thursday, December 1 at 3:00 pm in 338 Johnston Hall.

### **CCT in the news:**

**LSU CCT to Showcase Computational Applications at Supercomputing 2011 in Seattle**

**Source:** [LSU Office of Communications & University Relations](#)

**LSU CCT Celebrates 10 Year Anniversary**

**Source:** [LSU Office of Communications & University Relations](#)  
[Noodles.com](#)

### **Please Note:**

- Keep your eyes on your email inbox in November, when the entire LSU community will have the opportunity to answer this question:

What do you think of LSU?

This comprehensive email survey will be conducted for the LSU Office of

Communications & University Relations by the Louisiana-based market research firm, SCI Research, <http://www.SCIresearch.com> . This is the second year of this annual comprehensive study. Thank you for your continued support and participation.

- The newly released 2011 *Components* can be found at:  
<https://www.cct.lsu.edu/site256.php>
- We are pleased to launch a bi-weekly CCT Tech Talk Series to promote hardware design, software and tools development, and research enablement efforts at CCT. We hope to enable and facilitate more development and effective use of advanced cyberinfrastructure (CI)-based computational science tools to significantly boost innovation and discovery in all disciplines and interdisciplinary fields across LSU. The goals of this series are to encourage inter-group collaborations, incubate new projects, and seek funding opportunities for multi-disciplinary collaborative research. As mentioned above, incubating new projects is one of our goals of the planned talks. Currently, there are two projects for which several of the researchers at CCT are seeking campus wide collaboration:
  1. Domain specific language and equation description language for code generation.
  2. Large scale DG-FEM programming framework on unstructured meshes.Please contact Honggao Liu ([honggao@cct.lsu.edu](mailto:honggao@cct.lsu.edu)) if you are interested in either of the projects or you are incubating a new project.
- Submissions for the 2012 Red Stick International Animation Festival are now being accepted thru January 6<sup>th</sup>. Visit <http://www.redstickfestival.org/competition/submissions/> for details.
- 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. Dine-in restaurant meals are not allowed on LaCarte credit cards. Please contact Susie McGlone ([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 two weeks, so please plan accordingly.
- Please remember to send your news concerning grants, awards, conferences, or other pertinent information to CCT Event Coordinator Jennifer Fontenot 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.
  - [Facebook group](#) : LSU Center for Computation & Technology
  - [Twitter](#) : LSUCCT
  - [YouTube channel](#) : LSUCCT

**Interest groups:**

- **MAG (Mobile App-Art-Action Group):** Everyone interested in the potential for Mobile Apps is invited to come and add their vision for these revolutionary devices. Meetings are scheduled December 7<sup>th</sup>, 5:00-6:00 pm. For more information, visit <http://www.cct.lsu.edu/site.php?pageID=63&newsID=1402>
  - Contact: Jesse Allison ([jtallison@lsu.edu](mailto:jtallison@lsu.edu))
- **GPU:** meets weekly (Wednesdays @ 2:30 pm in 338 Johnston) and encourages participation from anyone who would like to join in the discussions. Join the mailing list: [lasigma-gpu@loni.org](mailto:lasigma-gpu@loni.org)
  - Contact: Bhupender Thakur ([bthakur@cct.lsu.edu](mailto:bthakur@cct.lsu.edu))

**Upcoming events:**

November 30: [Training: Scientific Workflow & Viz in VisTrails](#)

Thru January 6, 2012: [Red Stick International Animation Festival “Best of the Fest” accepting entries](#)

January 20-21, 2012: [Scientific Computing Around Louisiana Workshop](#)

April 15-17, 2012: [Symposium on Laptop Ensembles & Orchestras](#)

**Upcoming Grant Deadlines:**

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

**[Sustainability Research Networks Competition \(SRN\)](#)**

December 1, 2011 10:00 am

At Most \$ 12,000,000.00 available

**[Software Infrastructure for Sustained Innovation \(SI2\) Scientific Software Innovation Institutes \(S2I2\)](#)**

December 14, 2011 10:00 am

At least \$500,000.00 available