



## CCT Weekly September 18- September 24, 2011

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### Stochastic Modeling Study at LSU Predicts Refined Algorithms

Although it has long been recognized that many physical systems are fundamentally stochastic, the desired governing equations for applications are usually deterministic. However, as we move toward a more realistic acceptance of probability as an essential component in the analysis of complex phenomena, the role of stochastic modeling is receiving more and more attention. This trend is illustrated, for example, by stochastic simulations to support petroleum reservoir management, probabilistic financial decision making and probabilistic weather forecasts.

LSU Assistant Professor of Mathematics and the Center for Computation & Technology, Xiaoliang Wan, received a \$100, 211 award from the National Science Foundation to study the effect of Wick-type stochastic modeling and develop algorithms and applications. "The goal of the proposed research is to understand mathematically the effect of Wick products, as a generalization of Itô's integral, on stochastic (elliptic) problems and to develop new algorithms to quantify the uncertainty in stochastic mathematical models of complex physical systems," said Wan.

The research will strive to identify the discrepancy between stochastic elliptic models and construct a new stochastic elliptic model based on the Wick product to reduce the discrepancy between the two stochastic modeling strategies produced. The development of more efficient algorithms will be attempted by incorporating the lower-triangular structure induced by the Wick product, as well as the development of a high-order adaptive method to solve the optimization problem given by the large deviation theory for random perturbations of dynamical systems. Lastly, applying the developments discussed, Wan will study some important physical phenomena such as diffusion in porous media, subcritical bifurcation, and exploration of high-dimensional configuration space.

Furthermore, the overall impact of this study will:

- ▶ from the theoretical point of view, provide the possibility of establishing a connection between two types of stochastic elliptic modeling strategies, which previously have been studied separately. A new stochastic elliptic model will be proposed and may shed new light on the understanding of the Wick product for physical applications;
- ▶ from the numerical point of view, provide the possibility for improving further current state-of-the-art numerical algorithms for stochastic elliptic partial differential equations and transitions in dynamical systems perturbed by small noise; and
- ▶ from the application point of view, provide the possibility for engineers to reconsider and examine this stochastic modeling strategy based on the Wick product, which might be more efficient and mathematically tractable for many cases. As a general framework, the developed high-order adaptive minimum action method can be employed to study general dynamical systems perturbed by small noise.

For more information on this or other research being done at the LSU Center for Computation & Technology, visit [www.cct.lsu.edu/home](http://www.cct.lsu.edu/home).

### Lectures this week: **Tuesday –**

There will be a Computational Mathematics Seminar Series lecture on "[A Quadratic C0 Interior Penalty Method For The Displacement Obstacle Problem Of Clamped Plates](#)" by Yi Zhang, LSU. The lecture will take place Tuesday, September 20 at 3:30 PM in 338 Johnston Hall.

### Please Note:

- **Register for SC11 by Oct. 17th and save up to \$250!** The SC11 early registration deadline is October 17th. The fee structure for SC11 makes it even more advantageous to register early this year. Registering early can save you up to \$250 off your technical program registration (depending on your registration category). Also, registering by Oct. 17th can save you up to \$305 off tutorial registration. <http://sc11.supercomputing.org/?pg=registration.html>

- The 2011 ACM ICPC South Central USA Regional Programming Contest is now accepting team entries for the October 28 and 29th event. The ACM International Collegiate Programming Contest (ICPC) provides college students with opportunities to interact with students from other universities and to sharpen and demonstrate their problem-solving, programming, and teamwork skills. The contest provides a platform for ACM, industry, and academia to encourage and focus public attention on the next generation of computing professionals as they pursue excellence. The contest is a two-tiered competition among teams of students representing institutions of higher education. Teams first compete in regional contests held around the world from September to November each year. The winning team from each regional contest qualifies to advance to the ACM International Collegiate Programming Contest World Finals, typically held the following March to mid-April. Additional high-ranking teams may be invited to the World Finals as wild card teams. Fees are \$125.00 per team if registered prior to October 10, 2011. Registration fees are for a team of three members and one coach. Guests and alternates are an additional \$30 each. (See complete registration rules at: <http://icpc.baylor.edu/icpc/regionals/About.htm>). The South Central USA Regionals will take place on October 28 and 29 at
  - o Louisiana State University, Baton Rouge, Louisiana
  - o La Tourneau University, Longview, Texas
  - o East Central University, Ada, Oklahoma
 For more information, or to register a team, visit: <http://icpc.baylor.edu/icpc/regionals/>.

- Jesse Allison will give a lecture on Wednesday, Sept. 21 at 5:30 at Brown University in conjunction with the Pixilations Festival - Sonic Intervention - Extending the Application of Sonic Arts. An Interactive Installation by Jesse Allison, Nick Hwang, and Michael Straus: Social Structure [ construction no.1 ] will be exhibited at the Pixilations Festival in Providence, RI, Sept. 22-25 concluding with a concert performance of the installation on the 25th.

- **Electronic Arts Recruiting LSU Students for Internships:** Electronic Arts Inc. will be visiting the LSU campus October 24-25, 2011, to recruit students for their intern positions as follows: software engineer; designer; technical artist; online software engineer; software quality assurance engineer; and business analyst, analytics. Deadline to submit resumes and apply is Monday, October 17, 2011. For more information, visit <http://www.cct.lsu.edu/eajintern>

- Submissions for the 2012 Red Stick International Animation Festival are now being accepted thru January 6th. Visit <http://www.redstickfestival.org/competition/submissions/> for details.

- **TechX2011** will be held October 5-7 at the Baton Rouge River Center. The concept behind TechX 2011 is simple - bring together the entire technology and telecommunications buying and decision making community, and provide them with network marketing and education to show them how many great companies are right here in the Gulf Coast Region. Registration is FREE! For more information and to register, visit <http://www.techx2011.com/>.
- **TRIPLE EX (Excite, Explore, Experiment)** - 3rd Annual Conference for Undergraduate Research, November 4, 2011 (8:00AM - 4:00 PM), LSU Union Cotillion Ballroom. The LSU Office of Strategic Initiatives and The Cain Center are sponsoring a Conference for Undergraduate Student Research. Submissions are open until October 3rd for posters and oral presentations. For more information, visit <http://www.i3.lsu.edu/tripleex>
- Save the date! Louisiana EPSCoR is hosting the greatly anticipated National Science Foundation workshop, **Science: Becoming the Messenger**, on November 17, 2011, at the Baton Rouge Marriott. The 1-day workshop provides targeted communications training to Researchers, Faculty & Postdocs, Students, Public Relations Officers and Communicators. The NSF's Office of Legislative and Public Affairs has assembled a team of nationally renowned communicators to provide this training. Participants will learn how to craft a message and communicate with a variety of audiences, explore new media, pick up live camera interview skills and more. There is no registration fee to attend but pre-registration is required. Registration details to come soon!
- **Post Your Part-time Jobs for FREE through Careers2Geaux:** Now that school is back in session, our students looking for part-time jobs. Through Careers2Geaux, you may post any position type, including your part-time opportunities, for FREE! This system is password-protected and available to LSU students, faculty, staff, and registered alumni 24 hours a day, seven days a week. To list your position(s) in Careers2Geaux, click the Careers2Geaux link <https://lsu-csm.symplicity.com/employers> and follow the instructions for creating an account. Once you enter the information for your position, the status of your posting will remain "pending" until reviewed by a staff member. Open positions are posted for 45 days. If you have any questions, please contact Amy Caillouet, Administrative Coordinator, at 225-578-2162 or email at [amyc@lsu.edu](mailto:amyc@lsu.edu).
- 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.
  - o [Facebook group](#) : LSU Center for Computation & Technology
  - o [Twitter](#) : LSUCCT
  - o [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 schedule October 5th, November 2nd and December 7th , 5:00-6:00 pm. For more information, visit <http://www.cct.lsu.edu/site.php?pageID=63&newsID=1402>. Contact: Jesse Allison ([italison@lsu.edu](mailto:italison@lsu.edu))
- **GPU:** meets weekly (Thursdays @ 2:00 pm in 338 Johnston) and encourages participation from anyone who would like to join in the discussions. Contact: Bhupender Thakur ([bthakur@cct.lsu.edu](mailto:bthakur@cct.lsu.edu))

#### Upcoming events:

**September 21:** [Training: Parallel Programming Concepts](#)

**September 28:** [Training: Intro to MPI](#)

**October 24-25:** [Electronic Arts Recruitment @ LSU](#)

**October 24:** Cinema for the Ears

**October 28-29:** [ACM ICPC South Central USA Regional Programming Contest](#)

**Thru November 1:** [Symposium on Laptop Ensembles & Orchestras accepting entries](#)

**November 12-18:** [SC11](#)

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

#### Upcoming Grant Deadlines:

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

[Partnerships for International Research and Education \(PIRE\)](#)

October 19, 2011 10:00 am

At Most \$ 4,000,000.00 available

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

December 1, 2011 10:00 am

At Most \$ 12,000,000.00 available

#### Publish Date:

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