

## *Acknowledgements*

### *Planning Committee*

Dr. Donna Llewellyn, *Co-chair*

Dr. Roxanne Moore, *Co-chair*

Dr. William Wepfer, *Principal Investigator*

Dr. Marion Usselman, *Co-Principal Investigator*

Dr. Meltem Alemdar, *Co-Principal Investigator*

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Will Jimerson

Dr. Gordon Kingsley

# *Complex Systems in Education Symposium*

**February 25-26, 2016**



Advanced Manufacturing & Prototyping Integrated to Unlock Potential

*Inspiring innovators of tomorrow, with partnership today.*

**National Science Foundation Math & Science Partnership**

**Award # 1238089**

**10/1/2012 - 9/21/2017**

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### Travel Reimbursement

The Complex Systems in Education Symposium hosted by Advanced Manufacturing & Prototyping Integrated to Unlock Potential (AMP-IT-UP), will cover the following travel expenses for out of town symposium attendees:

1. Airfare or personal vehicle mileage to and from Atlanta, Georgia.
2. Hotel accomodations (*room and taxes only*) for Thursday, February 25, 2016.
3. Transportation to the host hotel, to the networking dinner, and to the airport.  
*\*All out of town guests were sent Uber promotion codes via email that direct bill your transportation to the symposium account. If you choose to use another method of transportation, feel free to submit receipts for reimbursement on your travel reimbursement form.*
4. The following meals are included in the symposium registration: networking dinner (Thursday evening), continental breakfast (Friday morning), and lunch (Friday afternoon).  
*\*Out of town guests are welcome to purchase a more substantial breakfast in Technology Square or at the host hotel on Friday morning, if necessary. Any additional meal charges outside of the provided meals listed above require receipt documentation in order to submit reimbursement on the travel reimbursement form.*

Please print a travel reimbursement form from our symposium website ([www.ampitup.gatech.edu/complexsystemssymposium2015](http://www.ampitup.gatech.edu/complexsystemssymposium2015)). Handwritten and/or partially typed forms will be accepted. Additional copies will be available at the symposium registration table.

**Please submit travel reimbursements by March 15, 2016.** It is recommended that you turn in your travel reimbursement to Will Jimerson prior to departing from Atlanta to obtain original receipts, which are required to submit. We will be able to make photocopies for your records, if requested.

Otherwise, after the symposium, the form and original receipts can be submitted to via mail to:

Will Jimerson  
 GT CEISM  
 817 West Peachtree Street, NW  
 Suite 300  
 Atlanta, GA 30308  
 (404) 385-4424

## Tech Square Dining

### The Barrelhouse

www.barrelhouseATL.com  
Mon-Fri: 11:00 a.m. - 3:00 a.m.  
Sat: 5:00 p.m. - 3:00 a.m.  
Sun: 5:00 p.m. - 12:00 a.m.  
22 5th Street NW  
Atlanta, GA 30308  
404-844-5601

### Chuck's Famous

www.chucksfamous.com  
Mon-Sat: 10:00 a.m. - 9:00 p.m.  
68 5th Street NW  
Atlanta, GA 30308  
404-249-7733

### Gyro King

www.gyrogyro.net  
Mon-Sun: 11:00 a.m. - 9:00 p.m.  
85 5th Street NW  
Atlanta, GA 30308  
404-892-5707

### Moe's Southwest Grill

www.moes.com  
Mon-Sun: 11:00 a.m. - 9:00 p.m.  
85 5th Street NW  
Atlanta, GA 30308  
404-541-9940

### Ray's Pizza

www.raysnypizza.com  
Mon-Sun: 11:00 a.m. - 10:00 p.m.  
26 5th Street NW  
Atlanta, GA 30308  
404-888-9911

### Waffle House

www.wafflehouse.com  
Open 24/7/365  
66 5th Street NW  
Atlanta, GA 30308  
404-872-0028

### Starbucks at Barnes & Noble @ GT

www.starbucks.com  
Mon-Fri: 7:00 a.m. - 10:00 p.m.  
Sun: 10:00 a.m. - 6:00 p.m.  
48 5th Street NW  
Atlanta, GA 30308  
404-894-2515

### The Spence

www.thespenceatl.com  
Lunch  
Mon-Fri: 11:30 a.m. - 2:00 p.m.  
Dinner  
Mon-Thu: 5:30 - 10:00 p.m.  
Fri & Sat: 5:30 - 11:00 p.m.  
Sun: 5:30 - 9:00 p.m.  
75 5th Street NW  
Atlanta, GA 30308  
404-892-9111

### Subway

www.subway.com  
Mon-Sun: 7:00 a.m. - 9:00 p.m.  
75 5th Street NW  
Atlanta, GA 30308  
404-815-2977

### Tin Drum Asian Cafe

www.tindrumcafe.net  
Mon-Fri: 11:00 a.m. - 9:30 p.m.  
Sat-Sun: 12:00 p.m. - 9:00 p.m.  
88 5th Street NW  
Atlanta, GA 30308  
404-881-1368

### Yogli Mogli

www.yoglimogli.com  
Mon-Sun: 11:00 a.m. - 10:00 p.m.  
85 5th Street NW  
Atlanta, GA 30308  
404-522-2999

## Welcome Letter

Hello and welcome to Georgia Tech!

We are so excited that you could join us for this symposium. We hope that at the end of the day, you walk away with new ideas, fresh perspective, and new friends and collaborators.

We started working on applying complex systems analysis to school settings about three years ago and have been fascinated by the conversations we've had with our colleagues in various disciplines. One thing we learned quickly is that we all speak different languages. Simple terms like 'model' take on very different meanings for the various disciplines depending on context. It took several meetings of our diverse research group to establish a common language so that we could start moving forward on innovative ideas.

One of our goals for this symposium is to help break down disciplinary barriers and begin the conversations that lead to a common language and an interdisciplinary approach so that we can all contribute to this worthy and interesting research. We look forward to learning from each and every one of you.

Sincerely,

*Dr. Donna Llewellyn*  
Symposium Co-Chair  
Executive Director  
Institute for STEM & Diversity Initiatives  
Boise State University

*Dr. Roxanne Moore*  
Symposium Co-Chair  
Research Engineer  
CEISMC  
Georgia Institute of Technology

**Schedule of Events**

**Thursday, February 25, 2016**

**After 4:00 p.m.**

Out of Town Guest Hotel Check In  
 Renaissance Atlanta Midtown Hotel  
 866 West Peachtree Street, NW - Atlanta, GA 30308

**5:00 p.m. - 6:00 p.m.**

Happy Hour  
 Community Smith Restaurant  
 \*Dutch treat\*  
 Renaissance Atlanta Midtown Hotel  
 Lobby Level

**6:30 p.m. - 10:00 p.m.**

Exhibit Tour & Networking Dinner  
 Places & Spaces: Mapping Science Exhibit  
 David J. Sencer Centers for  
 Disease Control & Prevention (CDC) Museum  
 1600 Clifton Road - Atlanta, GA 30329

**Friday, February 26, 2016**

**8:00 a.m. - 9:00 a.m.**

Continental Breakfast  
 Georgia Institute of Technology Global Learning Center Third Floor  
 84 5th Street, NW - Atlanta, GA 30308

**9:00 a.m. - 4:00 p.m.**

Symposium  
 Georgia Institute of Technology Global Learning Center Room #330/331  
 84 5th Street, NW - Atlanta, GA 30308

Welcome Remarks.....Dr. William Wepfer & Dr. Donna Llewellyn

The Funding Landscape.....Dr. Susan Singer & Dr. Ryan Kelsey

Lightning Talks.....Symposium Attendees

Lunch

What is a system and a model?.....Dr. Chris Paredis

What is complexity?.....Dr. Stephen Uzzo

Informing & Analyzing Public Policies with Complexity Science Tools.....Dr. Asim Zia

The Industry Perspective.....Dr. Deepa Gupta

Open Discussion

Closing Remarks.....Dr. Donna Llewellyn

**Places & Spaces:  
 Mapping Science Exhibit**



Drawing from across cultures and across scholarly disciplines, the Places & Spaces: Mapping Science exhibition demonstrates the power of maps to address vital questions about the contours and content of human knowledge. Created by leading experts in the natural, physical, and social sciences, visual arts, and the humanities, the maps in Places & Spaces allow us to better grasp the abstract contexts, relationships, and dynamism of science, technology, and innovation. Individually and as a whole, the maps of Places & Spaces allow data to tell stories which both the scientist and the layperson can understand and appreciate.

Complementing Places & Spaces are some recent examples of CDC's mapping and data visualizations for use by public health professionals and policy makers, as well as infographics designed to communicate with the general public.

Places & Spaces: Mapping Science is curated by the Cyberinfrastructure for Network Science Center at Indiana University. In Atlanta, the exhibition is presented by the David J. Sencer CDC Museum, CDC's Office of the Chief Operating Officer, CDC's Office of Public Health Scientific Services, with additional support from Thomson Reuters through the CDC Foundation.

## Host Hotel



Renaissance Atlanta Midtown Hotel  
866 West Peachtree Street, NW  
Atlanta, GA 30308  
(678) 412-2400

**Check in:** Thursday, February 25, 2016 after 4:00 p.m.

**Check out:** Friday, February 26, 2016 before 12 noon

*One king bedroom and tax charges will be charged to the symposium account. Guests will be held responsible for any additional charges (damages, upgrades, room service, etc.)*

Confirmations were sent via email to out of town symposium guests.

If you have any problems with your accommodations, please contact Will Jimerson at (404) 385-4424.

*Within walking distance of the Global Learning Center where the symposium will be held, explore a world of modern sophistication in the epicenter of Atlanta's music and artistic scene at Renaissance Atlanta Midtown. Distinguished from other Midtown Atlanta hotels, our boutique hotel boasts spacious guest rooms, Aveda amenities and inspiring views. Centrally located near Technology Square, Piedmont Park, Fox Theater, The World of Coca-Cola, High Museum of Art, Woodruff Arts Center and many other destinations, we make exploring Atlanta a breeze. We passionately believe that no detail of your stay should be overlooked, and thus our attentive staff are charged with making your stay a memorable one. We pride ourselves on being one of the premier hotels in Midtown Atlanta and feel that no matter the length of your stay, the Renaissance experience should be unforgettable.*

## Keynote Speakers

*Dr. Ryan Kelsey* is a Program Officer for the Education Program at the Helmsley Charitable Trust where he primarily focuses on national work in undergraduate STEM education. He also contributes to the K-12 program in the area of teacher preparation and on effective uses of educational technology. Prior to coming to the Trust, Ryan spent 13 years at the Columbia University Center for New Media Teaching and Learning, most recently as the Director of Projects. At Columbia, Ryan led a team of educational technologists and design specialists partnering with faculty on innovative educational projects in the full range of academic disciplines, including simulations, case studies, health interventions and global learning initiatives with funding from multiple public and private sources. He has also served as an adjunct assistant professor and instructor at Teachers College and New York University, offering courses in the design and analysis of effective solutions for improving higher education classroom practice using purposeful technology. Ryan earned his Ed.D. and M.A. in Communication and Education from Teachers College and his B.S. in biology from Santa Clara University. He also devotes time to environmental issues by serving on the board of the Black Rock Forest Consortium.



*Dr. Susan Rundell Singer* is Division Director in the Division of Undergraduate Education at NSF and Laurence McKinley Gould Professor, in the Biology and Cognitive Science Departments at Carleton. She is a nationally recognized leader in undergraduate education and plant biology. In addition to a PhD in biology from Rensselaer, she completed a teacher certification program in New York State. A developmental biologist who studies flowering in legumes and also does research on learning genomics, Susan is an American Association for the Advancement of Science (AAAS) fellow and received both the American Society of Plant Biology teaching award and Botanical Society of America Charles Bessey teaching award. She directed Carleton's Perlman Center for Learning and Teaching, was a National Science Foundation (NSF) program officer in Biology, and is a co-author of the Vision and Change in Undergraduate Biology report, as well as two introductory biology texts. She has served on numerous boards, including the NSF Education and Human Resources Federal Advisory Committee, Biological Sciences Curriculum Study Board, the American Society of Plant Biology Education Foundation, and the Botanical Society board of directors; was a member-at-large for the AAAS Education Section; participates in the Minnesota Next Generation Science Standards team; and was a member of the National Academies' Board on Science Education. She has participated in six National Academies studies, including chairing the committees that authored America's Lab Report, Promising Practices in STEM Undergraduate Education and Discipline-based Education Research: Understanding and Improving Learning in Undergraduate Science and Engineering. Currently she is improving undergraduate education through her leadership at NSF and across Federal agencies, implementing the undergraduate goals of the Federal Science, Technology, Engineering, and Mathematics 5-year Strategic Plan.



Directions

Airport to Host Hotel

Renaissance Atlanta Midtown Hotel
866 West Peachtree Street, NW - Atlanta, GA 30308
(678) 412-2400

Uber

- \*Download Uber application in Apple Store or Google Play.
\*Enter promotion code on menu (sent to out of town guests via email).
\*Enter destination address to secure a driver.

All charges will be charged to the symposium account. No reimbursement will be required.

Recommended Taxi Service in Midtown Atlanta
Checkers Cab Service
(404) 351-1111

MARTA (Transit Service)

- \$2.50 per ride
\* Take the red or gold north bound train to the Midtown train station.
\*Exit the train onto Peachtree Place and turn right.
\*Turn left at the first intersection, West Peachtree Street and Peachtree Place, near Steel Restaurant & Mac's Beer and Wine.
\*Walk two blocks.
\*The hotel will be on your right.

To Networking Dinner

GOVERNMENT ISSUED ID IS REQUIRED FOR ENTRANCE\*

Places & Spaces: Mapping Science Exhibit
David J. Sencer Centers for Disease Control & Prevention Museum
1600 Clifton Road - Atlanta, GA 30329

OUT OF TOWN GUESTS:

Uber

- \*Download Uber application in Apple Store or Google Play.
\*Enter promotion code on menu (sent to out of town guests via email).
\*Enter destination address to secure a driver.

All charges will be charged to the symposium account. No reimbursement will be required.

Recommended Taxi Service in Midtown Atlanta
Checkers Cab Service
(404) 351-1111

Complementary Parking

When you enter the CDC campus, veer right to proceed to the security checkpoint. Identify yourself as a visitor to the David J. Sencer CDC Museum. Security officers will ask to see your picture ID (driver's license or passport) and will do a quick scan of the undercarriage of your vehicle. Security officers will then ask you to open both the trunk and the hood of your car for inspection. You will then be directed to the visitor parking deck straight ahead. When you walk into the Tom Harkin Global Communications Center from the parking deck (P5, ground level), you are entering the David J. Sencer CDC Museum lobby.

Lost? Need assistance?
Contact Will Jimerson at (404) 385-4424.

To Symposium

Georgia Institute of Technology Global Learning Center Room #330/331
84 5th Street, NW - Atlanta, GA 30308
(404) 385-6203

Walking Directions from Host Hotel

- \*Exit the Renaissance Atlanta Midtown Hotel and turn right onto West Peachtree Street towards Abercrombie Place.
\*Walk three blocks.
\*Turn right onto 5th Street NW near the Technology square sign and the Historic Biltmore Hotel on the left.
\*If you are on the opposite side as the restaurants, use the pedestrian walkway at the intersection of Spring Street NW and 5th Street NW to get on the opposite side of the road near the GT Hotel and Conference Center.
\*The entrance to the Global Learning Center is directly after Chuck's Famous Restaurant and Great Clips.
\*Take the elevator to the 3rd floor.

Driving Directions & Parking

E81 Technology Square Parking Deck
Address for GPS:
770 Spring Street, NW
Atlanta, GA 30308-1031

- \*Take a parking ticket upon entrance to the parking deck.
\*Use the Global Learning Center elevator on the left side of the parking deck to the 2nd floor.
\*Exit the second floor and turn right for the building entrance to the Global Learning Center.
\*Take the elevator inside of the building to the 3rd floor.

Parking vouchers will be provided at the end of the symposium.

From Symposium to Airport

Uber

- \*Download Uber application in Apple Store or Google Play.
\*Enter promotion code on menu (sent to out of town guests via email).
\*Enter destination address to secure a driver.

All charges will be charged to the symposium account. No reimbursement will be required.

Recommended Taxi Service in Midtown Atlanta
Checkers Cab Service
(404) 351-1111

MARTA (Transit Service)
\$2.50 per ride

Recommended train stations:
North Avenue Train Station
(near Global Learning Center)

Midtown Train Station
(near host hotel)

- \* Take the red or gold south bound train to the airport train station.