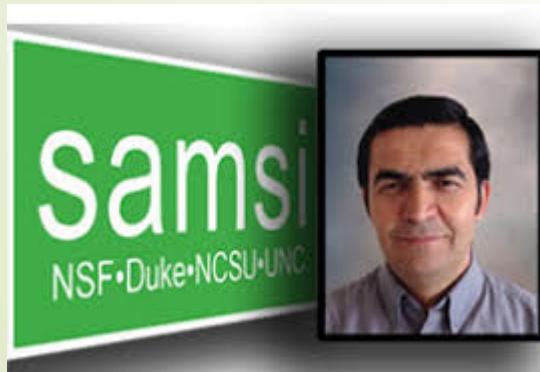


# Undergraduate Workshop on Model Uncertainty: Mathematical and Statistical (MUMS)



<http://www.samsi.info/mums>

Elvan Ceyhan  
Deputy Director



# What is SAMSI?



- ▶ One of the NSF-DMS funded Math institutes
- ▶ Established in 2002...
- ▶ Mission: ***Forge a synthesis of the statistical sciences and the applied mathematical sciences with disciplinary science to confront the very hardest and most important data-and model-driven scientific challenges***





# WHAT CAN SAMSI DO FOR YOU?



## Research

Year-long programs

Semester-long programs

Summer programs

Topical workshops



## Education and Outreach

Graduate student modeling workshop

Undergraduate workshops

Workshops on promoting diversity

# Education and Outreach Activities

## ► Undergraduate level

- Summer: Modeling Workshop (5 days)
- Fall & Spring: Outreach Workshops (1.5 days)

## ► Graduate level

- Summer: Industrial Mathematical & Statistical Modeling (IMSM) Workshop (10 days)
- Fall & Spring: Research Program Courses, Working Groups and Poster Day/Reception

## ► Promote Diversity in Math Sciences

- Math Institute Diversity Initiatives
- Annual and Biennial Workshops (MMW @ SACNAS etc.)



# ONGOING AND UPCOMING YEARLONG RESEARCH PROGRAMS

## 2018-19

- **Program on Statistical, Mathematical, and Computational Methods for Precision Medicine (PMED)**
- **Model Uncertainty: Mathematical and Statistical (MUMS)**

## 2019-20

- **Year-Long Programs**
- **Program on Games, Decisions, Risk and Reliability (GDRR)** (<https://www.samsi.info/games-19-20>)
- **Semester-Long Programs**
- **Deep Learning (DL)** (<https://www.samsi.info/sem-deep-ling>)
- **Causal Inference (CI)** (<https://www.samsi.info/sem-cas-inf>)

- <https://www.samsi.info/programs-and-activities/>

# UPCOMING UNDERGRADUATE WORKSHOPS

## 2018-19

- ▶ **Undergraduate Modeling Workshop:** May 28-June 2, 2019
- ▶ (This 4.5 day workshop involves group projects)

## 2019-20

- ▶ **Fall Undergraduate Workshop:** October *TBA*, 2019
- ▶ (Focus of this 1.5 day workshop is either GDRR or DL or both)
- ▶ <https://www.samsi.info/programs-and-activities/education-and-outreach/>

# Some Logistics

- ▶ **Wifi:** SAMSIGuest  
password: number!@
- ▶ Restrooms are in the aisle, when you exit on left is ladies room and on the right is the mens room.
- ▶ Do not forget to pick up your folders, which has the schedule and your name badges



# Special Thanks to

- **Bruce Pitman, Ralph Smith, Elaine Spiller, Pierre Gremaud, Valerie Schwartz, and SAMSI Postdocs and Graduate Fellows**





# Schedule of Activities

Monday, February 25, 2019

Time	Activities
9:00-9:45	<i>Tutorial on R Software</i> Pulong Ma, Wenjia Wang, SAMSI
10:00-11:00	<i>Tutorial on Matlab</i> Nikolas Bravo, SAMSI
11:15-12:15	<i>Quantifying Uncertainty in Hazard Forecasting</i> Elaine Spiller, Marquette University
12:15-1:30	Lunch

# Schedule of Activities

Monday, February 25, 2019

Time	Activities
<b>1:30-5:15</b>	<b>Lectures and Hands-on Demos (SAMSI Postdocs)</b>
<b>1:30-2:15</b>	<i>Elementary Bayesian Inference - Theory</i> Ralph Smith, NCSU
<b>2:30-3:15</b>	<i>Elementary Bayesian Inference - Practical Aspects and Project</i> Ralph Smith, NCSU
<b>3:30-4:15</b>	<i>A Biased Introduction to Global Sensitivity Analysis</i> Pierre Gremaud, NCSU
<b>4:30-5:15</b>	<i>Panel Discussion: Career Opportunities,</i> Valerie Schwartz, Institute for Advanced Analytics, NCSU SAMSI Postdocs and Graduate Fellows
<b>5:15-6:30</b>	Dinner

# Schedule of Activities

Tuesday, February 26, 2019

Time	Activities
9:00-10:00	<i>Project Work</i> Ralph Smith & students working in teams
10:00-10:45	<i>An Introduction to Surrogates and Emulators</i> Bruce Pitman
10:45-12:00	<i>Project Work and Reports (coffee available)</i> Ralph Smith & students working, and team reporting
12:00-12:15	Adjourn and Box Lunch