# 2019 NY SCIENTIFIC DATA SUMMIT: ADVANCE PROGRAM

**WEDNESDAY, JUNE 12, 2019**                                  Davis Auditorium, Columbia University

| TIME | SPEAKER | TITLE |
|---|---|---|
| *8:30-9:00 am* | *Continental Breakfast* | |
| *9:00-9:15 am* | *Welcome and Opening Remarks*<br>*Steven Nowick (Columbia University/Data Science Institute [DSI]) and Frank Alexander (Brookhaven National Laboratory/Computational Science Initiative [CSI])* | |

**Steven Nowick (Columbia), Chair**

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|---|---|---|
| *9:15-10:15am* | **KEYNOTE: Gavin Schmidt, Director, NASA Goddard Institute for Space Studies, NY** | **"Challenges in Climate Science in an Era of Big Data"** |
| *10:15-10:45am* | *Coffee Break* | |

## SESSION 1: EARTH AND CLIMATE SCIENCE (PART 1)

**Barbara Chapman (Stony Brook University/BNL), Chair**

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|---|---|---|
| *10:45-11:15 am* | *Robert Kopp, Rutgers University* | *"Mapping Sea-Level Change in Time, Space, and Probability"* |
| *11:15-11:45 am* | *Ryan Abernathey, Columbia University/ Lamont-Doherty Earth Observatory* | *"Pangeo: Big Climate Data Analytics on HPC and Cloud"* |
| *11:45-12:15 pm* | *Qidong Yang, Chia-Ying Lee and Michael K. Tippett, Columbia University/ Lamont-Doherty Earth Observatory* | *"Improved Forecasts and Understanding of Hurricane Rapid Intensification"* |
| *12:15-1:45 pm* | *Lunch and Poster Session #1* | |

## SESSION 2: EARTH AND CLIMATE SCIENCE (PART 2)

**Marco Giometto (Columbia), Chair**

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|---|---|---|
| *1:45-2:15 pm* | *Kun Wang, Wai-Ching Sun and Qiang Du, Columbia University* | *"A Multiscale Meta-Modeling Game for Fluid-Infiltrating Porous Media"* |
| *2:15-2:45 pm* | *Jeroen Tromp, Princeton University* | *"Workflow Management for Exascale Global Seismic Tomography"* |
| *2:45-3:00 pm* | *Per Nyberg, Cray Inc* | *"Industrial Perspective: Converged Simulation and AI Workload Trends in Earth Sciences"* |
| *3:00-3:45 pm* | *Coffee Break and Poster Session #1 (cont.)* | |

## SESSION 3: COMPUTATIONAL ASTROPHYSICS AND COSMOLOGY

**Michael McGuigan (BNL/CSI), Chair**

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|---|---|---|
| *3:45-4:15 pm* | *Peter Nugent, LBL* | *"Supernova Astrophysics and Cosmology: the Merger of Simulations and Observations"* |
| *4:15-4:45 pm* | *Greg Bryan, Columbia University* | *"Simulating the First Stars and Black Holes in the Universe"* |
| *4:45-5:45 pm* | **KEYNOTE: David Keyes, KAUST** | **"The Convergence of Big Data and Large-Scale Simulation: Leveraging the Simulation-Data-Edge Continuum for Science"** |
| *5:45-7:00 pm* | *Social Reception* | |

**NYSDS 2019**

**THURSDAY, JUNE 13, 2019**　　　　　　　　　　　Davis Auditorium, Columbia University

| TIME | SPEAKER | TITLE |
|---|---|---|
| 8:30-9:00 am | *Continental Breakfast* | |

*Luca Carloni (Columbia/DSI), Chair*

| TIME | SPEAKER | TITLE |
|---|---|---|
| 9:00-10:00 am | **KEYNOTE: Mark Moraes, Head of Engineering, D.E. Shaw Research** | **"Drinking from a Firehose:  Solving Data Analysis Challenges Posed by the Anton Supercomputer"** |
| 10:00-10:30 am | *Coffee Break* | |

## SESSION 4: STREAMING DATA ANALYSIS

*Shantenu Jha (Rutgers/BNL), Chair*

| TIME | SPEAKER | TITLE |
|---|---|---|
| 10:30-11:00 am | *Mike Tuts, Columbia University* | *"Historical Perspective – The ATLAS Experiment at CERN's LHC: How Do You Analyze 40 Million Physics Pictures Per Second?"* |
| 11:00-11:30 am | *Luca Carloni, Giuseppe Di Guglielmo, Yeon-Jae Jwa and Georgia Karagiorgi, Columbia University* | *"Accelerating Deep Neural Networks for Real-Time Data Selection for High-Resolution Imaging Particle Detectors"* |
| 11:30-1:00 pm | *Lunch and Poster Session #2* | |

*David Knowles (Columbia), Chair*

| TIME | SPEAKER | TITLE |
|---|---|---|
| 1:00-2:00 pm | **KEYNOTE: Rick Stevens, Argonne National Laboratory/University of Chicago** | **"AI for Science"** |
| 2:00-2:15 pm | *Short Break* | |

## SESSION 5:  BIOMEDICAL INFORMATICS

*Sassan Ostvar (Columbia), Chair*

| TIME | SPEAKER | TITLE |
|---|---|---|
| 2:15-2:45 pm | *Georgia Tourassi, ORNL* | *"Artificial Intelligence for Near-Real Time Population Cancer Surveillance: Challenges and Opportunities"* |
| 2:45-3:15pm | *Ji Hwan Park, Han Eol Cho, Jong Hun Kim, Melanie Wall, Yaakov Stern, Hynsun Lim, Shinjae Yoo, Hyoung-Seop Kim and Jiook Cha, BNL, Yonsei University College of Medicine [S. Korea], National Health Insurance Service Ilsan Hospital [S. Korea], Columbia University* | *"Electronic Health Records Based Prediction of Future Incidence of Alzheimer's Disease Using Machine Learning"* |
| 3:15-4:00pm | *Coffee Break and Poster Session #2 (cont.)* | |

## SESSION 6:  LARGE-SCALE IMAGE ANALYSIS AND MAPPING

*Melanie Wall (Columbia), Chair*

| TIME | SPEAKER | TITLE |
|---|---|---|
| 4:00-4:30 pm | *Yuewei Lin, Xiaoning Li, Qun Liu and Shinjae Yoo, BNL, Stony Brook University* | *"One-Shot Particle Picking in Cryo-EM Images"* |
| 4:30-5:00 pm | *Suryanarayana Maddu, Bevan L. Cheeseman, Ivo F. Sbalzarini and Christian L. Mueller, TU Dresden [Germany], Max Planck Institute Dresden [Germany], University of Cambridge [UK], Flatiron Institute [NY]* | *"Enabling Data-Driven Discovery in Biology by Statistical Learning of Interpretable Mathematical Models from Microscopy Videos"* |
| 5:00-5:30 pm | *Qian Wang and Xiaofu He, NY State Psychiatric Institute, Columbia University* | *"A Hierarchical Feature Extraction Pipeline Using Resting-State fMRI for Autism Classification"* |
| 5:30-6:00 pm | *Aurel Lazar, Columbia University* | *"Building the Functional Map of the Fruit Fly Brain"* |

# 2019 NY SCIENTIFIC DATA SUMMIT: ADVANCE PROGRAM

**FRIDAY, JUNE 14, 2019**                                    Davis Auditorium, Columbia University

| TIME | SPEAKER | TITLE |
|------|---------|-------|
| *8:30-9:00 am* | *Continental Breakfast* | |

## SESSION 7: UNCERTAINTY QUANTIFICATION IN SCIENCE

*Frank Alexander (BNL/CSI), Chair*

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|------|---------|-------|
| *9:00-10:00 am* | **KEYNOTE: Karen Willcox, UT Austin** | **"Predictive Data Science for Physical Systems: from Model Reduction to Scientific Machine Learning"** |
| *10:00-10:30 am* | *Yibo Yang and Paris Perdikaris, University of Pennsylvania* | *"Physics-Informed Deep Generative Models for Scalable Uncertainty Quantification"* |
| *10:30-11:00 am* | *Coffee Break* | |

## SESSION 8: SCALABLE ALGORITHMS AND COMPUTER SYSTEMS FOR SCIENTIFIC APPLICATIONS

*Robert Harrison (Stony Brook University/BNL), Chair*

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| *11:00-11:30 am* | *Rajit Manohar, Yale University* | *"Neuromorphic Computing"* |
| *11:30-12:00 pm* | *Shantenu Jha, BNL/Rutgers University* | *"Middleware Building Blocks for Scientific Workflow Systems"* |
| *12:00-12:10 pm* | *Closing Remarks*<br>*Steven Nowick, Columbia University/DSI and Kerstin Kleese van Dam, Brookhaven National Laboratory/CSI* | |

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